Chapter 8

FA Operations

Chapters 1-7 described the basics of how a FA battalion is structured and how it shoots, moves, communicates, and sustains. This chapter discusses how a FA battalion applies those techniques and principals in the context of FA operations in a variety of operational situations. Section I discusses FA considerations common to all operations. Sections II and III cover FA operations in support of offensive and defensive operations, respectively. Section IV details FA support of other unique tactical operations, such as airborne operations. Section V addresses FA support of stability operations and support operations. And Section VI discusses climate and terrain considerations that impact on FA operations. Each section addresses tactics, techniques, procedures, and considerations in relation to the six tactical task areas discussed in Section I, Chapter 1. The focus of this chapter is on FA operations. Fire support tactics, techniques, and procedures are included in FMs 6-20, 6-20-10, 6-20-30, and 6-20-40.

SECTION I – COMMON FA CONSIDERATIONS

8-01. There are several FA considerations that may be applicable in all or most types of operations. Those are addressed in this section. Actions unique to a specific type of operation are addressed in the appropriate section.

DEPLOY/CONDUCT MANEUVER

- During wargaming and during the battle, anticipate when tactical movement vice tactical maneuvering of the battalion or batteries may be necessary.
- When speed is necessary, consider moving the battalion on multiple routes if possible.
- Thoroughly identify terrain management issues during planning, wargaming, and rehearsals. Conduct movement and positioning coordination early to reduce conflicts.
- Consider using the hours of darkness for movement and resupply.

DEVELOP INTELLIGENCE

- Develop information on both military and civilian threats.
- Identify and template all enemy FA assets that can affect combined arms operations and the FA battalion's operations.
- Develop and submit prioritized FA related intelligence and target acquisition requirements as early as possible.
- Request and collect intelligence information from maneuver units, MPs, nearby units, and host nation civil/military elements as necessary to protect FA battalion assets from ground attack.

EMPLOY FIRES

DETECT AND LOCATE TARGETS

- Identify all specified and implied targeting responsibilities.
- Develop targets and targeting information to support counterfire and SEAD operations.
- Identify which observers (primary and backup) will trigger FA events (e.g., fire missions, cueing).
- Coordinate the support of external FA and non-FA intelligence and TA assets to acquire targeting information and BDA.
- Plan and direct counterfire radar operations in coordination with force FA radar operations.

DELIVER FIRES

- Destroy, neutralize, and suppress enemy indirect fire systems with proactive and reactive counterfire.
- Provide close and deep fires to support maneuver operations and to destroy and disrupt enemy C2.
- Provide FA illumination to assist friendly force night operations, to mark locations or targets, to provide friendly direction orientation, or to degrade enemy night vision equipment.
- Mass fires to gain maximum efficiency and effectiveness.
- Interdict and disrupt enemy CSS efforts and troop movements.
- Continuously review and adjust primary and backup EFAT responsibilities. In DS battalions the S3 must also maintain close coordination with the brigade FSE to monitor changes in EFST and trigger responsibilities. When responsibilities change, the S3 must ensure the responsible unit quickly receives all frequencies, lasing codes, or quickfire/sensor-to-shooter linkage information. The BAO may need to deliver or redistribute ammunition, to include emergency CCLs.
- Provide fires in support of aviation operations (attack helicopters, air cavalry, air assault, CAS, and JAAT). Provide SEAD.
- Provide rapid, SCATMINE minefields to support maneuver operations.
- Provide smoke for obscuration, suppression, screening, and deception to support maneuver operations.
- Coordinate for meteorology and survey data.

PERFORM LOGISTICS AND CSS

- Stockpile ammunition to support major firing events (such as preparations or counterpreparations).
- Time key ammunition deliveries of low-density ammunition (such as illumination) and stockpiled ammunition (for fires such as preparations) to arrive soon before the time it is required.
- Use helicopter resupply for critical items, especially when supply lines become extended.

EXERCISE C2

COMMUNICATE

- Closely monitor distances during planning and execution to determine when digital and voice radio range limitations may become excessive.
- Employ alternate digital routing and voice capability to back up critical digital communications.
- Carefully position and move retrans teams to maintain communications in offensive and defensive situations.
- Use decentralized techniques such as direct routing and quickfire channels to provide immediately responsive sensor-to-shooter linkages for critical fires.

COORDINATE FIRE SUPPORT

- Make maximum use of available FSEs to gather friendly and enemy information and coordinate movement and positioning.
- Use liaison as much as possible to ensure effective coordination with other FA units and other military and civilian elements as necessary.
- Increase frequency of information/database updates during fast moving operations, and whenever danger close fires are planned or anticipated.

PROTECT THE FORCE

- Coordinate support from maneuver units, MPs, nearby units, and host nation civil/military elements to assist in defending FA battalion assets from ground attack and in repelling attacks.
- Consider using supplementary positions for lengthy, preplanned missions, especially when the counterfire threat is high.
- Make maximum use of mask to shield fires and communication from enemy acquisition.

SECTION II – FA SUPPORT OF OFFENSIVE OPERATIONS

8-02. This section describes FA tactics, techniques, procedures, and considerations for FA support of offensive operations. It addresses those principles that are generally common to all offensive operations, and discusses FA considerations unique to specific types of offensive actions.

BASIC FA TASKS IN THE OFFENSE

8-03. FA prepares the way for the maneuver force by suppressing, neutralizing, or destroying the enemy as well as obscuring his vision of friendly movement. FA fires are planned to soften enemy defenses before the attack. Short, violent preparations are planned and targeted against front-line defenses, OPs, C2, indirect fire weapons, and reserves.

DEPLOY/CONDUCT MANEUVER

8-04. Offensive operations frequently involve an ebb and flow of forward, rearward, and lateral movement. During periods of rapid advance, battle space may open up, and PAs may be relatively easier to find. When advances stall, or attacking forces are counterattacked, battle space may condense. Movement may become a series of shorter tactical maneuvers, occasionally involving increased lateral or even rearward movement.

- Plan to use more hasty occupations to support rapid movement.
- Plan to use increased map reconnaissance, since time available for ground reconnaissance will likely decrease, and the terrain will not be available while it is in the enemy's possession.
- Request photographic reconnaissance or copies of the products from other reconnaissance efforts.
- Consider air reconnaissance, if available.
- Consider locations that the enemy used for his FA units. It may be an indicator that the terrain is suitable. However they may contain hazards due to ICM duds or SCATMINE from friendly FA attacks.
- FA battalions supported by a single counterfire radar may have difficulty maintaining radar coverage during fast moving offensive operations. DIVARTY or Corps Arty assistance may be necessary.
- FA battalions may rely more heavily on the faster movement techniques, especially in the faster-paced offensive operations.
- Position firing units well forward to range beyond maneuver objectives. Identify requirements for extended range munitions.
- Plan alternate routes to bypass enemy obstacles. Request engineer mobility support.
- Consider repositioning light units by air.

DEVELOP INTELLIGENCE

- Identify and prioritize enemy indirect fire assets that can potentially impact friendly offensive operations. Develop and provide counterfire targets for preparations, counter-preparations, and other proactive and reactive counterfires.

- Find canalizing terrain or road networks in the vicinity of enemy FA that can be blocked or interdicted to prevent retreat of enemy artillery, to entrap enemy FA, or create TAIs and kill zones. Coordinate intelligence/TA coverage of the area. Consider attacking entrapped enemy FA by air or ground forces as an alternative to FA attack.

EMPLOY FIRES

Detect And Locate Targets

- Plan for frequent repositioning of TA assets based on FLOT movement.
- Use CFFZs to provide TA coverage on suspected enemy firing positions.
- Ensure radar is in position in time to support the assault on the objective and consolidation.

Deliver Fires

- Provide fires at the time and place required by the maneuver commander, to include suppressive fires on the objective.
- Isolate the objective with fires beyond and to the flanks.
- Provide fires to support breaching operations. Use ICM, HE, and smoke to suppress enemy forces overwatching obstacles. Use smoke to screen the breaching operation, and aggressive counterfire and CFZs to reduce the enemy indirect fire threat against the breeching force.
- Plan for increased use of hasty survey -- survey availability decreases in relation to the speed of the advance.
- Prepare to receive and execute hasty fire plans to support changes in objectives, to support in repelling enemy counterattacks, or to support developing penetrations and exploitations.
- Put survey with lead FA units. Regularly forward updated survey data to force FA HQ to facilitate emplacement of following FA assets.
- When the FA battalion supports lead elements, especially during penetrations and exploitations, it must increase coordination with its higher FA HQ to maintain effective meteorology support.
- Consider using Copperhead against counterattacking forces or against armored forces in strongpoints. Anticipate hasty planning procedures.
- Coordinate with division and corps TA assets to identify deep targets.
- Offensive operations may require increased DPICM and less SCATMINE. Anticipate changing ammunition requirements as the battle reaches a culminating point, and transitions to the defense.

PERFORM LOGISTICS AND CSS

- Coordinate stockpiling of ammunition for preparations.
- Plan for increasingly extended lines of resupply.
- Plan for more frequent moves of the combat trains.
- Synchronize resupply of ammunition and POL. Push well designed CCLs far enough forward to quickly link up with firing units.
- Consider aerial resupply using Army air, container delivery system (CDS) and/or mass supply (light forces).

EXERCISE C2

Communicate

- Plan retrans capability to cover extended lines of communication (LOC).
- Rely primarily on radio (voice/digital) communications, since establishing wire links becomes more difficult in mobile situations.

Coordinate Fire Support

- Plan fires to prevent reinforcement, disengagement, and resupply of the objective.
- Plan fires to protect units as they reorganize on the objective.

PROTECT THE FORCE

- Plan for unit defense in a 6,400-mil environment, since encountering bypassed enemy elements becomes more probable.
- Plan counter-counterpreparation fires. Include this requirement in ammunition requests and distribution plans. Ensure ammunition plans address movement and use of the ammunition if it isn't needed.
- Within the framework of the maneuver deception plan, consider deception techniques to confuse the enemy's intelligence assets.
- Consider using Firefinder CFZs for increased force protection.
- Prepare to provide continuous FS in an NBC environment. The threat of an enemy NBC attack may increase as his defeat becomes imminent.

FORMS OF MANEUVER

8-05. Maneuver units use five forms of maneuver in the offense:

- Envelopment.
- Turning movement.
- Penetration.
- Frontal attack.
- Infiltration.

8-06. FA battalion commanders and staffs must understand the differences in these forms of maneuver and the implications for supporting FA battalions.

ENVELOPMENT

8-07. Envelopments are usually fast-paced, fluid operations, requiring hasty planning techniques and increased reliance on battle drills and fire plans for branches or sequels. A DS or R FA battalion supporting a maneuver brigade envelopment will plan and provide fires for both the fixing force and the enveloping force. The depth of the envelopment will generally be relatively shallow. The following considerations apply:

- A primary consideration is how much FA (if any) to send with the enveloping force. Battlespace along the corridor used by the enveloping force will be tight and security tentative. Consider the depth of the envelopment, and branches and sequels . The battalion may be able to provide much of the needed support from close behind the fixing force.

- GS/GSR FA may be pushed well forward to support the enveloping force and to provide deep fires to prevent reinforcements, to disrupt C2 and support SEAD for supporting air assets.
- Consider using RFLs to control fires of converging forces. S3s should monitor the frequency of RFL and FLOT updates and request updates if he determines data may have become outdated. The unit may use quickfire voice channels to obtain the most current FLOT information.
- CSS support for FA in the corridor of advance may be difficult, as interdiction of LOCs may be likely.

8-08. In larger operations, DS/R FA battalions may support either the fixing force or the enveloping force. GS/GSR battalions may support either force or provide support to both operations. FA units should consider the following:

- Since the enveloping force is usually the main effort, the DS FA battalion supporting it may frequently receive reinforcement, while the DS battalion supporting the fixing force may not.
- DS/R FA battalions supporting enveloping forces may experience limited battlespace and tentative security in the corridor of advance. Shoot-and-scoot tactics may be difficult, especially if the advance slows or stalls. The FA unit should increase force protection measures due to the threat from bypassed and counterattacking forces.
- Some GS/GSR FA battalions may follow closely behind lead enveloping forces in order to support DS/R units and facilitate their movement; to facilitate attack of deep targets; and to take the bulk of the counterfire and SEAD responsibilities off the lead DS/R FA battalions.
- Many FA battalions may have o/o missions: DS battalions supporting lead forces may become GS if their unit relinquishes its lead role and goes into reserve. R FA battalions may support two or more DS FA units in succession as follow-and-assume forces take the lead role.
- Planning and rehearing require careful coordination, as R/GSR units may support multiple planning efforts. Battalions may need to create additional liaison teams out-of-hide to cover liaison responsibilities.

TURNING MOVEMENT

8-09. A turning movement is somewhat similar to envelopment. While a small fixing force keeps the enemy in his defensive positions, the main force passes around the enemy defenses and secures an objective deep in the enemy's rear area. Many of the considerations for an envelopment apply to a turning movement, with the following additions:

- The unit may use short-destruct SCATMINE, fired by FA supporting the fixing force, to keep the enemy in his positions or to channel the direction of his withdrawal.
- Depending on the size of the objective area(s), after the friendly force takes and secures the objective, DS/R FA battalions may have little secure battlespace over which to disperse. They may have difficulty supporting the friendly force from inside the newly established battle position. Support may be necessary from GS/GSR units within range or DS FA units on other objectives in the area. FA battalions may require maneuver support to secure adequate firing positions.

- The turning force may need defensive fires after it seizes its objective. This may include the use of EAs involving Copperhead, SEAD for air attacks, and hasty SCATMINE.
- CSS may be more difficult. Temporary interdiction of LOCs may occur as the force concentrates on consolidation and defense of the objective.

PENETRATION

8-10. In a penetration, the friendly force concentrates firepower and forces to rupture defenses along a narrow front to create an assailable flank and/or to gain access to the enemy's rear. Often one maneuver unit will achieve the initial penetration, and following units will widen or deepen the penetration or will conduct exploitation or pursuit operations as appropriate. A FA battalion supporting a penetration may support both of these forces (e.g., a DS battalion supporting a brigade level penetration or a GS FA unit supporting division or corps level penetrations). In division and corps penetrations, a DS FA unit may support the penetrating force or a following force. In large unit penetrations FA battalions will frequently have o/o missions.

8-11. FA units supporting a penetration should consider the following:

- FA battalions may participate in short, intense preparations, coordinated with air attacks, focused on the point of desired penetration. This will frequently include fires on second and third echelon defensive positions.
- The penetration unit will frequently be the main effort. DS FA units supporting this effort can expect one or more reinforcing units. FA units supporting follow-and-support and/or follow-and-assume forces may establish liaison with forward DS units to better coordinate survey, positioning, and fire coordination as following units assume the lead.
- Exchange of zones of fire responsibilities between FA units is a critical event when maneuver forces change roles and conduct passage of lines. Responsibility for EFATs may change from one FA unit to another when mission changes do not occur according to plan. Liaison and thorough evaluation of branch/sequel possibilities during the MDMP are essential to effective battle handoffs.
- The penetrating force will usually have priority of fires, and multiple FA battalions, in various roles, may work together as part of a consolidated counterfire plan directed from DIVARTY or Corps Arty. The higher FA HQ may use CSBs extensively to better assign counterfire radar responsibilities.
- GS FA units may support SEAD operations for attack helicopter and/or airforce attacks to destroy, suppress, or fix enemy reserve forces.
- Fire planning for branches and sequels must be thorough, with adjustments during the penetration to account for changing factors.
- FA battalions may participate in massed fires involving groups and series of targets designed to widen the penetration or destroy/suppress enemy units on the flanks of the penetration.

FRONTAL ATTACK

8-12. Units use the frontal attack to attack the enemy across a wide front, along the most direct approaches in an attempt to overwhelm and destroy a weakened enemy force or to fix an enemy and restrict his movement.

- Frontal attacks usually present the least force protection concerns for a FA unit unless they develop into exploitations or pursuits.
- A frontal attack frequently has a main attack and one or more supporting attacks. FA battalions DS to the main attack forces are more likely to receive a reinforcing unit. FA support to the main attack force, a follow-and-assume force, or the reserve force may evolve into support for a penetration, exploitation, or pursuit. Main force attacks may be deeper and thus LOCs more extended.
- The main effort, or the most successful friendly attacking force, will most likely draw the most fire and larger enemy counterattacking forces. Anticipate higher CSRs, greater attrition rates, and increased requirements for transportation and maintenance support.

INFILTRATION

8-13. Infiltration is the covert movement of all or part of the attacking force through enemy lines to an objective in the enemy's rear area. It is a form of maneuver normally used with and to support other forms of maneuver. Infantry, cavalry, and reconnaissance forces use this form of maneuver more frequently than do armored or mechanized forces.

- An infiltration generally presents FA units the highest force protection risk of the five forms of maneuver. In smaller operations, FA units may not move forward with infiltrating forces. However, FA units may need to use positions well forward to range objectives and deep targets. FA units may need intense counterfire programs to reduce the counterfire threat. If FA is infiltrated with maneuver forces the battalion may need maneuver forces for security. The S3 and S2 must make maximum use of all force protections measures during an infiltration.
- FA units may use FA raid tactics and airmobile movement of light FA.
- Judicious use of FSCMs, carefully planned clearance of fire procedures, and frequent force location updates are necessary as an infiltration has increased risk of fratricide due to intermingled friendly and enemy forces. Consider using hasty NFAs, or RFAs for forces that become cut off while infiltrating. The S3 and battalion FDO must ensure the TOC maintains accurate situational awareness (manual and digital), and quickly disseminates position updates.

MOVEMENT TO CONTACT/SEARCH AND ATTACK

8-14. A movement to contact operation develops a situation and establishes or regains contact. A movement to contact may involve the following actions:

- **Search and Attack.** A search and attack is a variant of the movement to contact. It is conducted by small, light maneuver units, air cavalry, or air assault forces over large areas. A search and attack shares many of the characteristics of an area security mission.

- **Meeting Engagement.** This is a combat action that occurs when a moving force, incompletely deployed for combat, collides with and engages an enemy at an unexpected time and place.
- **Approach March.** Units may use an approach march when the enemy's location is known, thus allowing the friendly force to move with greater speed and less physical security or dispersion than occurs with use of the traveling movement technique.

8-15. In supporting a movement to contact or a search and attack type operation, a FA battalion should consider some of the following actions:

- Provide immediate fires to leading elements/elements in contact.
- Use priority of fires and quickfire channels.
- Attack deep targets with massed fires to prevent enemy reinforcements.
- Since the enemy situation is usually vague, CFZs on lead elements may be more useful than CFFZs.
- Plan for hasty attack contingencies.
- Anticipate frequent moves and hip shoots.
- Keep ammunition uploaded.
- Numerous requests for immediate smoke may occur when contact is established. The S3 will need to carefully monitor expenditures. Smoke resupply may need to be put on the road as soon as the S3 confirms major contact has begun.
- Plan fires along the route and on the flanks to protect the force.
- S3s must watch for rapid changes in the situation, which can occur more easily in developing situations. Hasty FPFs or blocking fires can help lead elements to disengage or establish hasty defensive positions.
- Since the intelligence situation is often vague, it may be difficult to knock out enemy FA until it begins firing. Thus his initial counterfire capability may be strong. FA battalion S3s may need to plan/request additional counterfire support early to ensure the enemy does not gain an advantage in the early counterfire battle.
- Air reconnaissance (fixed or rotary-wing) may support the operation. The S2 should coordinate rapid communication of enemy FA locations to counterfire planners. The S3 and supported FSE may decide to develop some or all of these targets into an on-call counterfire program than firing them as they are acquired.
- Before the maneuver force has established contact, a good time to fire proactive counterfire targets is just prior to a friendly FA unit's next planned move. That way the firing unit doesn't give away a position location that may be needed to support forces making contact. The same applies to SEAD or other deep planned targets.
- Place coordinated fire lines (CFLs) well forward of friendly maneuver elements. Plan o/o CFLs on phase lines to facilitate rapid shifting as the force moves.

ATTACKS

8-16. The attack differs from a movement to contact in that information on enemy dispositions is more developed, which allows the maneuver

commander to achieve greater synchronization. Attacks are characterized as hasty or deliberate. There is no clear distinction between a deliberate and hasty attack. They differ mainly in the level and detail known about the enemy. Also, deliberate attacks are characterized by a more extensive preparation period prior to execution.

HASTY ATTACK

8-17. The hasty attack is the most common type of attack. Hasty attacks normally result from a movement to contact, successful defense, or continuation of a previous attack.

8-18. FA considerations associated with a hasty attack include the following:

- There may not be time for an extensive counterfire program prior to the attack, or the servicing of many counterfire targets during a preparation (if one is conducted). There will also be less time to collect and develop intelligence on counterfire targets. This may result in more reactive counterfire missions and greater reliance on counterfire radars.
- The unit may not use a preparation due to limited planning time or the need to achieve surprise. Short, intense programs, series, or groups may be used to mass fires on critical areas or targets sets.
- Anticipate immediate suppression and quick smoke fire missions.
- Expect the rapid shift of massed fires to exploit identified enemy weak points.
- DS/R TOCs must work quickly with the brigade FSE to coordinate fires in support of multiple brigade/battalion hasty fire plans. GS/GSR battalions may participate in hasty fire plans for forward maneuver units, SEAD for air force or Army aviation operations, or deep attacks.
- Low-density ammunition types may be in short supply as a hasty attack often occurs as a branch or sequel to an earlier operation. The S3 may want to immediately request a certain number of CCLs be brought forward and prepositioned in pickup areas while actual ammunition requirements are being determined.
- Targeting officers in R units may temporarily move to assist the brigade FSE and maneuver S2 with targeting. This may allow the FSE to concentrate on FS coordination and facilitate getting targeting decisions made and passed to firing units in the short time available.
- Rehearsal time will be extremely limited. The S3 should use WARNOs to quickly disseminate EFATs. DS/R units may only have time for one consolidated rehearsal with the combined arms team. A digital rehearsal may not be advisable if there is a chance units can't purge rehearsal information and reconfigure automation systems with actual attack information in a timely manner.
- The staff must aggressively seek out the information needed to update and disseminate AFATDS guidances. FSEs and FSCOORDs are primarily responsible for developing and coordinating the necessary information, however FA battalion S3s must drive the process to receive the information as early as possible. Guidance on the use of SCATMINE, ICM, and smoke is especially critical.

DELIBERATE ATTACK

8-19. Deliberate attacks normally include high volumes of planned fires, major shaping operations, and the forward positioning of logistics. Deliberate attacks follow a distinct period of preparation used for extensive reconnaissance, detailed planning, task organization of forces, rehearsals, and plan refinement. FA battalion considerations include:

- Deliberate attacks may involve an extensive FA preparation, and/or counterfire and SEAD programs if enough ammunition is available. Stockpiled ammunition should not be brought forward and downloaded too early and should be well protected to prevent loss to sabotage or an enemy counterpreparation.
- Long preparations increase the unit's vulnerability to counterfire. A counterfire program shortly before the preparation or during its early phase may reduce the threat. The battalion should consider using supplementary firing positions for counterfire (or SEAD) programs and preparations. If time and resources permit, units should also harden firing positions used for long preparations.
- Plan to expend large amounts of smoke to screen friendly movements and obscure enemy observation.
- Expect an emphasis on thorough rehearsals. There may be time for several FA battalion level FA/FS only rehearsals before and/or after larger combined arms or force FA rehearsals.
- Prepare to support the deception plan before the main attack begins by massing fires and firing smoke on forward enemy units not in the area of the main attack.

EXPLOITATION

8-20. Exploitation results when a successful attack presents an opportunity for the friendly force to take significant advantage of a weakened, collapsed, or disorganized enemy force. Exploitations can have several objectives: secure deep objectives or destroy specific enemy forces or functions.

8-21. Units usually conduct an exploitation with two or more missioned maneuver forces. The primary force is the lead or direct pressure force, which must quickly destroy or bypass any enemy forces in route to the main objective. One or more forces follow the lead unit with the missions of follow-and-support and/or follow-and-assume. Depending on the situation and the plan, one of the forces may also be tasked to block and defeat a responding enemy reserve force.

8-22. A supporting FA battalion commander must understand the battalion's role. In larger exploitation operations (division and higher), the FA battalion may support a brigade-sized task force with one or more of the discussed missions. The battalion may need to follow the brigade at a distance that allows support, but without interfering with follow-on forces. If the advance stalls, battlefield space becomes limited, and hinders shoot-and-scoot tactics .

8-23. In brigade or smaller exploitations, the FA battalion supports battalion level forces advancing on a narrower corridor to less depth. It will be more difficult for all FA battalion elements to follow, and it may not be necessary

for more than one or two firing batteries to move with forward elements, depending on the size of the corridor, the depth of the advance, and the availability of reinforcing fires from MLRS.

8-24. In exploitation and pursuit operations a DS cannon battalion may have one or more reinforcing FA units to facilitate the rapid movement, and to provide deep fires. However, due to limited battlespace, the reinforcing unit may be an attached MLRS battery, or a composite 155mm/MLRS battery. Exploitations often involve o/o missions, to shift reinforcing FA from the lead unit to the follow-and-assume unit.

- Place additional emphasis on 6,400-mil capability to support units in contact with enemy located out of zone. METT-TC will dictate how to achieve this (one or more platoons, a firing battery, etc).
- Plan for frequent moves to keep pace with the target array.
- Keep ammunition uploaded and provide for emergency resupply of POL and ammunition.
- Maintain perimeter security since bypassed enemy units will try to break out and return to their own lines.
- Target deep to sever escape routes or to prevent reinforcements.
- SCATMINE, crater producing munitions (HE/PD), and dud producing munitions (ICM), should be carefully controlled to ensure commander's guidances are followed. These munitions could delay the exploitation if not properly employed. They may primarily be used on the flanks, for deep fires, or on positions to be bypassed.
- In a rapidly advancing exploitation, a DS or R FA battalion may need two counterfire radars to ensure coverage as frequent moves may be required. If the advance is not too deep, a DIVARTY or Corps Arty controlled radar could support the initial phase and pass targets to a GS unit while the DS/R controlled radar moves to a forward position in cleared terrain.
- The S2 should closely monitor intelligence reports for information on enemy FA moving in to attack the exploitation.
- Aerial resupply can facilitate CSS efforts and assist in evacuation of wounded personnel. Regular medivac helicopters may be best for serious wounded personnel, and requirements for this support may increase during pursuit and exploitation operations.

PURSUIT

8-25. An attack or exploitation frequently evolves into a pursuit, when the enemy tries to withdraw to a more defensible location. The friendly force exerts unrelenting pressure to keep the enemy from reorganizing and preparing defenses. Usually, a direct pressure force applies aggressive attacks against the withdrawing enemy force to prevent unhindered withdrawal while another highly mobile friendly force encircles the enemy. The encircling force cuts off his retreat and, in coordination with the direct pressure force defeats the enemy.

- FA fires may attack targets in the enemy's rear to slow his withdrawal and to cut off avenues for retreat.

  - Plan fires on enemy high-speed avenues of withdrawal.
  - Use FA at canalizing points and hasty river crossings where the enemy cannot easily bypass destroyed vehicles. These may be TAIs or NAIs with targeted intelligence and TA assets and quickfire links to the FA battalion. FA may also provide SEAD at these locations while air assets attack.
  - Destruction of enemy bridging equipment may destroy or degrade his ability to cross subsequent water hazards.
  - The FA unit should carefully control SCATMINE, crater producing munitions (HE/PD), and dud producing munitions (ICM), to ensure commander's guidances are followed. These munitions could delay friendly pursuit if not properly employed.
- FA fires will support the encircling force. If the encircling force is large, (brigade or larger) the entire FA battalion may follow and support. For smaller operations, the FA battalion may need to provide support from locations behind the direct pressure force. If adequate security is provided, it may be possible for one firing battery to closely follow the encircling force.
  - Increased smoke and suppressive fires may be required by the encircling force to assist them in bypassing elements that cannot be quickly overwhelmed.
  - The encircling force's flanks and/or rear may be more vulnerable to attack that those of the direct pressure force.
- Massed FA fires assist in maintaining pressure on the enemy, demoralizing him, and destroying his will to fight.
- Plan to move as an integrated element of the maneuver force.
- Establish FSCMs along the axis of advance to avoid possible fratricide.
- The pressure from maneuver forces will force enemy FA to move frequently. Use CFFZs to quickly target and attack enemy FA when it does stop to shoot. However, if the FA with the main force is significantly damaged, disorganized, or kept on the move, the major threat may come from longer ranging enemy FA units to the enemy's rear or on the flanks.
- CFZs on the lead force may be more useful than CFFZs on suspected enemy firing locations. Because of the nature of an exploitation, enemy fires could come from many directions.
- Streamline firing units to displace as quickly as possible.
- Position well forward so the unit can promptly deliver effective fires.
- Prepare for increased reliance on radio retrans and/or relay, since communications capabilities decrease with distance.
- Have a contingency plan for linkup operations. Maneuver elements may be airlifted to deep objectives to cut off the enemy at choke points.

RESERVES

8-26. Reserve operations frequently involve fast moving attacks into developing situations, often to support a branch, sequel, or unanticipated event. FA battalions supporting reserve force operations should consider:

- Increased involvement in coordinating and supporting hasty fire plans and making last minute changes to existing plans just prior to kick-off.
- One or more o/o missions as the FA unit may be used in a GS or GSR role prior to executing a DS or R in support of the reserve force.
- Clearance of fires challenges due to intermingled forces, fluid FLOT changes, RFLs/NFAs/RFAs, and unusual maneuver force boundaries.
- Deception fires may be used to mislead the enemy as to the timing and location of a counterattack.
- Fast tactical march may be necessary to position the FA battalion.
- Forward passage of lines operations as the reserve moves through forward forces.

SECTION III – FA SUPPORT OF DEFENSIVE OPERATIONS

8-27. FA allows the defending maneuver commander to attack the enemy before he moves within range of direct fire weapons, to maximize the effectiveness of combined arms kill zones and engagement areas, to economize maneuver forces for a planned counterattack and to swiftly shift firepower to critical points on the battlefield. FA can attack enemy follow-on echelons before they close with his maneuver units, thereby preventing the enemy from massing overwhelming firepower and allowing the supported maneuver force to defeat the enemy in detail.

ORGANIZATION OF THE DEFENSIVE BATTLEFIELD

8-28. Brigade, division, and corps defensive battlefields are often organized along three major functional areas – a security area, a main battle area (MBA), and a sustainment area. FA battalions operate in and provide support to forces throughout all three areas.

SECURITY AREA

8-29. Maneuver operations in the security area provide early warning and reaction time, deny the enemy reconnaissance, and protect the MBA. Operations in the security area are very fluid and fast moving. They often involve covering force operations, screens, guards, counter reconnaissance, delays, and passage of lines. FA battalions supporting brigade, division, or corps controlled security area operations, should consider the following:

- Maintain superior situational awareness to prevent being overrun or suffering significant damage from enemy advance elements that may infiltrate through dispersed security area forces.
- Minimize the supplies and equipment taken forward. Consider positioning most of the battalion trains farther than normal to the rear.
- FS coordination may require more attention to detail, as security operations frequently bring together units that may not regularly operate together. Requirements for liaison may increase.
- Increased smoke and SCATMINE may be required to slow the enemy, create kill zones, and allow security forces to disengage and move to successive defensive positions.
- Consider augmenting security area elements with additional observers and COLT/Striker teams.
- Plan counter preparation fires. Anticipate high reactive counterfire requirements immediately before and after initial enemy contact.
- Since many attacks begin during darkness, security operations may require significant coordinated illumination missions.
- Consider the effects of night attack, and enemy use of smoke on Copperhead EFATs.
- Distribution and expenditure of low-density, improved munitions must be carefully managed as batteries may be more dispersed. This limits the ability of batteries to backup each other's EFATs.
- Security area operations often culminate in a rearward passage of lines.

MAIN BATTLE AREA

8-30. The battle normally matures in the MBA, which contains the bulk of the maneuver force's combat power. Boundaries usually delineate major unit areas or sectors of responsibilities within the MBA. Forces may be arrayed in linear or non-linear (area) defensive posture. Units may use task force or brigade size BPs or strongpoints. Considerations for FA battalions supporting MBA operations include:

- Thoroughly plan to accept battle handoff from withdrawing security force FA and support their passage of lines. Units may use SCATMINE to close lanes behind withdrawing forces.
- Thoroughly understand the MBA obstacle plan, which may be extensive, and monitor battle progress to better anticipate unplanned requirements for FA fires supporting obstacles.
- Anticipate frequent planned and unplanned massed fire missions early, especially in EAs, as the force attempts to quickly disrupt, delay, and defeat the attacker with fires.
- GS/GSR MLRS units may occupy positions well forward in the MBA, or just beyond it to allow early, intensive counterfires and attrition of enemy FA.
- FA battalion S3s should closely monitor the battle for signs indicating transitions to branches and sequels – counterattacks, retrogrades, withdrawals. Review positioning and ammunition considerations.

SUSTAINMENT AREA

8-31. The sustainment (rear) area normally contains the bulk of the CSS capability of the force and may include artillery units, uncommitted combat forces, CS elements, and C2 facilities. FA units may occasionally maneuver and fire from within sustainment areas, especially in blunting penetrations in the MBA, in providing security to forces in the sustainment area, or when firing missiles against deep targets. See the section on rear area operations for additional information on FA fires in the sustainment area.

BASIC FA TASKS IN THE DEFENSE

8-32. Several tactical techniques and considerations are common to FA support of all types of defensive operations. These are discussed below.

DEPLOY/CONDUCT MANEUVER

8-33. Movement during early stages of the defense may often be reactive. The battalion may experience increased lateral and rearward movement, frequently unplanned, until the friendly maneuver force can regain the initiative, slow the advance and/or better anticipate enemy actions. The faster the defense is pushed back, the more congested the battlefield becomes as friendly units fall back onto one another. All personnel involved in movement planning must understand the impacts of battle tempo on movement.

- FA units supporting brigade and division size counterattacking forces may need to make a tactical move as part of the brigade or division movement into attack position. Integrate FA movement so that the FA units are in their firing positions in time to support the attack.

- Identify potential rearward and lateral chokepoints that may best be circumvented by early tactical movement.
- FA units should consider the possibility that civilian exodus/evacuation during defensive operations may interfere with tactical movement. Request MP support when necessary.
- Coordinate movement plans with the maneuver HQ. Consider the obstacle plan in planning movements.
- Conduct aggressive ground reconnaissance, selection, and occupation of position (RSOP) whenever the defense is forced into unexpected lateral or rearward moves. Other units may be slow to react, which can cause congested battle space. FA units may use alternate locations more frequently in the defense.
- Use lateral maneuver to methodically move some FA units away from enemy penetrations. This facilitates dispersal of FA units while allowing both continued support to forward defenses and massing of fires onto penetrating forces. However, logistic support may be complicated if the penetration becomes large enough that batteries are widely separated, especially if FA trains are forced to move rearward.
- Controlled sequencing of FA unit tactical maneuvering can facilitate positioning of FA units for follow-on missions (such as support of counterattacks). This can reduce the need for longer, tactical moves.
- Request advance preparation of all possible PAs that the battalion anticipates falling back into.

DEVELOP INTELLIGENCE

- Monitor threat posed by enemy reconnaissance and special purpose troops infiltrating into friendly territory in advance of main force.
- Determine potential enemy offensive use of NBC capabilities.
- Identify indicators of enemy massing of FA.

EMPLOY FIRES

Detect and Locate Targets

- Reliance on external TA assets to identify deep targets may increase.
- Anticipate movement of CFFZs based on S2s SITEMP and expected rate of enemy advance.
- Higher FA HQ/TA units can assist front line TA assets in identifying and reconnoitering TA positions toward the rear.

Deliver Fires

- The FA battalion may participate in targeting and scheduling for larger counterpreparations. The S3 must anticipate how these fires could impact other battalion missions.
- Provide target area survey to ensure accurate placement of FPFs, smoke screens, SCATMINE minefields, and fires supporting obstacles.

- Identify survey requirements early and request force FA assistance with survey points to the rear. Make maximum use of digital equipment to obtain and disseminate all known survey points.
- Deliver massed fires to support – planned kill zones, blunting enemy penetrations, counterfire/counterpreparation programs.
- Support rear operations against smaller infiltration forces or larger penetrating forces.

PERFORM LOGISTICS AND CSS

8-34. In the defense, supply lines are frequently shorter. During rearward movement, the battalion has the advantage of falling back into friendly territory. This allows advance preparation of many PAs and the battalion can fall back onto personnel, supplies and equipment. However, civilian evacuations and enemy fires can interfere with LOCs.

- Preposition ammunition for immediate consumption.
- Plan for surge use of CSS. Maximize benefits of shortened supply lines.
- If the batteries of a battalion become widely dispersed around the flanks of a penetration, the battalion may need to run a modified dual trains operation or coordinate support through other FA units until normal resupply lines are restored.
- Coordinate for forward triage of wounded personnel and forward repair of damaged equipment to return both to combat effectiveness rapidly.
- Consider means for channeling EPWs and refugees to the rear area.

EXERCISE C2

Communicate

- Use internal wire communications when possible.
- Plan redundant communications means.

Coordinate Fire Support

- Coordinate additional FA fires when survival or unplanned tactical moves temporarily hinder battalion or battery mission support.
- Identify FS requirements for stay-behind forces.
- Ensure commander's guidances address control of SCATMINE and dud/crater producing munitions, especially when general or focused friendly counterattacks are expected.

PROTECT THE FORCE

- Harden positions whenever possible.
- Coordinate for engineer support and Class IV materials.
- Plan for use of direct fire in support of battery defenses.
- Use CFZs to increase protection of key friendly units.
- Pay increased attention to OPSEC considerations concerning trash and abandoned equipment. Review emergency destruction procedures.
- Anticipate the need for survivability moves after the battalion has provided extended and/or intense massed fires (planned or unplanned).

MOBILE DEFENSE

8-35. The mobile defense actively orients on the destruction of the enemy force versus the retention of terrain. It employs a combination of fire and maneuver, offense, defense, and delay to defeat the enemy attack and destroy the enemy force.

8-36. The main effort and key to the mobile defense is usually a striking force (which is not a reserve force). Strike force operations may involve ground, airborne, air assault, amphibious, attack helicopter, and CAS operations, to include airmobile FA raids.

8-37. FA battalions play a key role in supporting mobile defense operations. DS/R FA battalions will participate in planning for all phases of the mobile defense. In division or larger operations, DS/R FA battalions may support one of the main defensive units or the strike force unit. In both small and large mobile defenses, GSR and GS units may have a wide range of support requirements, but often are involved in deep targeting and counterfire. Other considerations for FA battalions supporting a mobile defense include:

- Position batteries in depth for continuous support as batteries displace.
- Move batteries that will support the striking force into forward positions immediately prior to the attack. Anticipate passage of lines.
- Use positioning methods that maximize force protection in non-linear environments (larger groups, positioning with or near other elements, off high-speed approaches).
- Anticipate long range fires to support the striking force. Plan extended range ammunition or reinforcing (155mm/MLRS) fires accordingly.
- Anticipate participation in mass fire missions to support the striking force attack.
- Consider requesting infantry or MP support for increased force protection where non-linear conditions exist.
- Place increased emphasis on mutual support by fire between firing elements.
- Plan for increased use of hasty fire planning techniques, immediate smoke, suppressive fires, and target of opportunity minefields.
- Plan for fast-paced mobile warfare, operating frequently on the move or from vehicular CPs rather than dismounted shelters or tents.
- Place increased emphasis on monitoring security of LOCs. Reroute CSS and use air resupply as more frequently.
- Plan for increased use of RFLs, RFAs, and NFAs, especially during strike force operations.

AREA DEFENSE

8-38. Area defense focuses on denying the enemy access to designated terrain or facilities for a specific time, rather than outright destruction of the enemy. The area defense is normally organized around static defensive positions in depth, seeking to destroy the enemy forces with interlocking fires. There are two general forms of maneuver for an area defense – forward or in depth.

8-39. **Forward defense** emphasizes maintaining forward positions. FA considerations for a forward defense include:

- Hasty fire plans for frequent counter attacks forward of the FEBA.
- Increased reliance on massed fire missions to prevent penetrations.
- Longer, more lethal FPFs and anti-breaching fires to support more static defenses (increased HE/ICM/SCATMINE, decreased smoke).
- Increased need to harden and camouflage positions due to decreased movement options. Greater reliance on counterfire for force protection.
- Use lateral movement and infantry or MP support in response to enemy penetrations as terrain may not allow rearward displacement.
- Increased potential for direct fires, anti-armor teams, and other self-defense measures.
- Clearly stated guidelines regarding conditions and approving authority for FA survival moves.
- Increased use of wire and communications techniques to reduce electronic signatures.

8-40. **Defense in depth** makes maximum use of the depth of the AO to prevent enemy penetrations. FA considerations for a forward defense include:

- Increased use of smoke and SCATMINE to assist disengagements.
- Rearward and lateral displacements to support kill zone operations, followed by forward movement to support counterattacks.
- Increased use of vehicular TOC operations, and uploaded, on time delivery of ammunition.
- Increased reliance on established triggers for planned FA movements.
- Maximized prior development of successive, rearward positions.
- Maximum use of terrain for alternate and supplementary positions, and of relatively small movements in the FLOT for FA moves.
- CSS positioning and movement plans that consider FLOT movements.

RETROGRADE OPERATIONS

8-41. Considerations for retrograde operations include:

- Develop fires for delay plans early.
- Arrange a withdrawal schedule for the FA with supported units.
- Fire long-range fires from initial positions.
- Ensure continuous, responsive FA support is available for all sectors.
- Reconnoiter routes and positions to the rear, primary and alternates.
- Maintain high mobility throughout the delay.
- Monitor the delaying actions in adjacent sectors.
- Contribute to the obstacle and deception plans with FA fires.
- Consider use of CFZs on critical points or withdrawal routes; for example, river-crossing points and bridges.

ADDITIONAL FA CONSIDERATIONS FOR DEFENSIVE OPERATIONS

8-42. FA battalions may support the following defensive techniques, which may be conducted as part of larger defensive operations.

DEFEND IN SECTOR

8-43. This mission is characterized by an extremely fluid tactical situation in which friendly and enemy units may often be intermixed. To support the sector defense, the FA battalion must:

- Position batteries in depth for continuous support as units displace.
- Position batteries off high-speed avenues of approach.
- Track the battle continuously and keep batteries informed as enemy forces approach.
- Plan for rearward displacement. Coordinate routes and recognition signals with the supported maneuver unit.
- Ascertain and disseminate locations of existing and planned obstacles.
- Preposition ammunition for counterpreparations and immediate consumption. Keep all other ammunition uploaded for rapid movement.
- Conduct communications reconnaissance for fallback positions and preposition retrans capability if necessary.

DEFEND A BATTLE POSITION

8-44. BPs are used to focus and control a maneuver unit's fires, maneuver, and positioning. BPs prescribe a primary direction of maneuver fire by orientation of position. They are often placed on well-defined, enemy brigade or larger avenues of approach. The commander designates the conditions under which the force can abandon the BP. Frequently, the maneuver forces CS and CSS elements may operate outside of the BP.

8-45. A battle position defense is generally less fluid than the sector defense. When supporting a defense of a battle position, consider the following:

- Position units/batteries to ensure FS is available to security forces.
- Harden unit/battery positions to the maximum extent possible. Request engineer support when it is available.
- Ensure the locations of all friendly obstacles and engagement areas are known and plotted in battalion and battery CPs

DEFEND A STRONGPOINT

8-46. A strong point is a heavily fortified BP tied to a natural obstacle or restrictive terrain to create an anchor for the defense. It is designed to control key terrain and/or block, fix or canalize enemy forces. Strongpoints are prepared for all-around defense and rarely are used for armored or mechanized brigade or smaller forces. Strongpoints require extensive engineer support.

8-47. Defense of a strongpoint is seldom a stand-alone mission. Normally, the strongpoint is a part of a larger operation. The FA considerations for the strongpoint are in addition to those for the overall mission and may include:

- Position units/batteries so all or at least a substantial majority of available fires can be massed in support of the strongpoint.
- Consider use of a quickfire net for the unit manning the strongpoint.
- Position observers to overwatch the strongpoint and for controlling fires if communications are lost or the position is overrun.

SECTION IV – FA SUPPORT OF OTHER TACTICAL OPERATIONS

8-48. The operations discussed in this section occur often during combat. Some actions, such as passage of lines, crossing water obstacles, relief in place, and amphibious operations, are usually one phase of an operation. These operations are common to both the offense and the defense.

AMPHIBIOUS OPERATIONS

8-49. An amphibious operation is an attack launched from the sea by naval and landing forces embarked in ships or other watercraft for the purpose of landing on a hostile shore. A successful amphibious assault achieves surprise and concentrates an overwhelming force at a point of enemy weakness. The amphibious operation requires detailed planning, precise timing in coordinating CAS, NSFS, FA support, and effective command relationships. A naval officer is normally the commander of an amphibious task force (CATF). The landing force consists of both ground and air components. The CATF exercises the degree of authority over the entire force necessary to ensure success. The responsibility for conduct of operations ashore lies with the landing force commander (LFC). Planning and execution of the landing and assault are his concern. An amphibious operation is conducted in five phases: planning, embarkation, rehearsal, movement and assault.

8-50. The FA battalion is not simply a passenger on a ship-to-shore transport; it is an active component of the operation. Its active involvement before, during, and after the movement and assault is essential to the success of the landing force. When coastal topography permits, FA can be positioned on offshore islands to provide fires to support the assault element. As part of the landing party, DS artillery provides close support with direct and indirect fires to support the amphibious operation. For additional information refer to JP 3-02, *Joint Doctrine for Amphibious Operations.*

DEPLOY/CONDUCT MANEUVER

- Complete initial reconnaissance by map and air.
- Advance parties arrive with assault elements to prepare positions.
- Occupy firing positions quickly to support assault forces during the early stage of beachhead operations.
- Deploy recovery and/or engineer assets to facilitate FA occupation.
- Coordinate for PAs with the landing force commander.

DEVELOP INTELLIGENCE

- S2s should become familiar with Navy and USMC intelligence assets and information and determine channels for requesting intelligence and TA support during both pre-operation planning and execution.
- Anytime the FA battalion is operating in proximity of the ocean the S2 should maintain awareness of potential threats from enemy naval or marine forces.

EMPLOY FIRES

Detect And Locate Targets

- Coordinate with naval sources for initial targeting data.
- Aerial observers are used extensively during ship-to-shore movement.
- Plan TA handoff from the supporting arms coordination center (SACC) to the LFC.

Deliver Fires

- Obtain ballistic met support from Navy shipboard met stations.
- Coordinate with landing force HQ for available survey information.
- Use hasty survey techniques until survey assets are operational. Send survey ashore early to establish and extend a common grid.
- Decentralize tactical and technical FD to allow for flexibility until units are established ashore.
- Plan to process interservice calls for fire.
- Use engineers to stabilize gun positions, especially on sandy beaches.

EXERCISE C2

Communicate

- Establish radio as the primary means of communications during ship-to-shore movement.
- Plan communications to support aerial observers in ship-based aircraft.
- Exchange of interservice SOIs is imperative.

Coordinate Fire Support

- Provide movement plans for early landing and employment of FA units.
- Coordinate fires for the landing force with the SACC prior to landing. Once ashore, the LFC assumes responsibility for coordinating all fires.
- Plan SEAD in support of the landing.
- Ensure logistical support planning is an integral part of the FSP.

PERFORM LOGISTICS AND CSS

- Plan for high ammunition expenditure during the initial landing stages.
- Protect equipment and ammunition from salt water.
- Plan for resupply and evacuation by ship, plane or helicopter.
- Allocate vehicle recovery assets to help in resupply operations.
- Coordinate supply and/or logistic activities with naval logistic agencies.
- Cross-load to ensure availability of FA assets ashore.

PROTECT THE FORCE

- Disperse FA throughout the assault elements during movement ashore, however, unit integrity must be maintained.
- Equip personnel with life vests and other life support equipment.

AIR ASSAULT OPERATIONS

8-51. Division (or higher) HQ usually directs the formation of an air assault task force (AATF). The task force is designed for a specific mission and will be tailored for the specific mission. As an example, it may consist of an infantry battalion, an aviation company, and a FA battery. Overall command goes to the AATF commander. Air assault operations are used to seize deep objectives and to conduct penetration, covering force, or surveillance operations. They can operate in urban areas, jungles, and mountains and are used to reinforce threatened sectors.

8-52. FA participation in air assault operations is characterized by maximum decentralization of C2. Firing units move to quickly provide FA fires to attack deep targets, to bypass enemy concentrations or untrafficable terrain, and to facilitate future operations. FA units can expect to conduct SEAD, landing zone (LZ) preparations, and artillery raids. Artillery raids involve the rapid movement of artillery assets by air into position to attack a high-priority target. A FA raid normally requires operations across the FLOT, is short in duration, and does not involve sustained operations. Detailed planning, surprise, and speed of execution are key factors for success. FM 90-4 provides more information on air assault operations.

DEPLOY/CONDUCT MANEUVER

- Coordinate load plans to ensure critical elements are cross-loaded to prevent catastrophic loss in the event of downed aircraft.
- Conduct reconnaissance by map and air initially.
- Plan for air or ground displacement.

DEVELOP INTELLIGENCE

- Imagery can aid in identifying potential firing points, the general lay of the land, and major routes in the area.
- The supported maneuver unit S2 and force FA S2 can assist in templating FA and non-FA enemy forces in the air assault area and in identifying primary threats.

EMPLOY FIRES

Detect And Locate Targets

- Assign or attach FOs to accompany leading elements of the assault force to observe and adjust SEAD fires and execute the FSP.
- Coordinate with air reconnaissance and aerial scouts for target identification and attack.

Deliver Fires

- Execute fires to support the air movement plan under procedural or positive control (procedural control is the preferred method):
  - Initiate and terminate procedural-control of fires according to a strict time schedule.

  - Positive-control of fires relies on phase lines, air control points and/or other control measures to initiate, shift, and terminate fires.
- Coordinate for met in the new PA.
- Utilize the NSG and PLGR, or use hasty survey techniques until PADS is brought forward.
- Plan SEAD fires to support reinforcement, resupply, and medivac for the FA battalion as necessary.
- Give priority to intelligence collection in air assault AO to ensure accurate location of EAD.
- Support overall SEAD efforts and ensure priorities for SEAD, relative to other fires, are well understood by the TOC and battery FDCs.
- Plan fires for false insertions in support of the deception plan.

EXERCISE C2

Communicate

- Use C2 aircraft and coordinate retrans as necessary during the movement to ensure continuous communication between the FSE controlling fires and the assets providing those fires.
- Plan and coordinate visual signals (flares and colored smoke).
- Coordinate SOIs between air assault forces and supporting forces.

Coordinate Fire Support

- Coordinate short and intense SEAD fires along the flight route(s) to aid aircraft flying past areas of known or suspected enemy positions.
- Consider all SEAD assets: EW, FA, CAS, and attack helicopters.
- Plan to lift and shift fires, ACAs (formal and informal), and other FSCMs as needed to coincide with arrival times of aircraft formations.
- Ensure use of FA or mortar smoke on or near LZs meets commander's guidances and does not interfere with air or ground operations.

PERFORM LOGISTICS AND CSS

- Ensure adequate ammunition is available for the assault force artillery.
- Plan, prioritize, and synchronize resupply of all CSS, primarily Class V.
- Evacuate casualties by air.

PROTECT THE FORCE

- Consider enemy air, ground, and artillery threats when planning moves because units are most vulnerable in pickup zones (PZs) and LZs.
- Consider the effects of munitions in the LZ or PZ (ICM – duds, HE/PD – cratering) that may make the area unusable.

AIRBORNE OPERATIONS

8-53. Airborne operations are joint operations conducted between the Army and Air Force. The Air Force provides airlift, CAS, and aerial resupply for

airborne ground forces. Airborne units represent a contingency force that can be deployed worldwide on short notice.

8-54. FA units are normally attached to maneuver units for airborne operations (e.g., FA battery attached to a maneuver battalion). Parent FA units will assume control of subordinate units upon arrival in the airhead and will then establish standard command relationships. During brigade airborne operations, the FA battalion will provide an assault command post (ACP) to C2 batteries. FM 90-26, *Airborne Operations*, provides more information on airborne operations.

DEPLOY/CONDUCT MANEUVER

- Conduct initial reconnaissance by map or air.
- Plan displacement using air assets.
- Consider decentralized control for unit movement.

DEVELOP INTELLIGENCE

- Aerial photography can be extremely helpful in identifying potential firing points, better understanding the general lay of the land, and major routes in the area (from friendly and enemy perspectives).
- The supported maneuver unit S2 and force FA S2 may be able to assist in templating FA and non-FA enemy forces in the air assault area.

EMPLOY FIRES

Detect And Locate Targets

- Use aerial observers (Army aviation and Air Force AC-130).
- Deploy Firefinder radars as soon as practical after the initial assault.

Deliver Fires

- Plan noncratering munitions on airfields.
- Mass all available indirect fire systems, to include mortars.
- Ensure all units have a 6,400-mil capability.
- Prepare to use hasty survey techniques in the drop zone.
- Establish a common grid for FA and mortars as soon as possible.
- Coordinate met for the AO.

EXERCISE C2

Communicate

- Initially use primarily FM communications.
- Communicate by TACSAT, when available.
- Establish AM radio communications for use over long distances.
- Use visual signals and messengers for short-distance communications.

Coordinate Fire Support

- Rely on aerial photography when maps are not available.

- Ensure positive clearance of all fires (that is, silence is not consent), which is essential during initial stages of the operation.

PERFORM LOGISTICS AND CSS

- Resupply requires careful planning and coordination, especially Class V, as airborne units have limited CSS capability. Supplies are usually air-dropped or air-landed (containerized delivery or mass supply).
- Inspect weapons and equipment for damage after an airdrop.
- Conduct medical evacuation by air.

PROTECT THE FORCE

- Position units based on enemy ground, air, and artillery threats, as well as, the amount of space provided by the expanding airhead.
- Be prepared to provide 6,400-mil firing capability if necessary.
- Position units for mutual defense.
- Prepare unit defense taking maximum advantage of available intelligence and aerial photographs.

MILITARY OPERATIONS IN URBAN TERRAIN

8-55. Military operations in urban terrain (MOUT) are characterized by extreme limitations on freedom to maneuver. Both attacking and defending forces must use available cover and concealment offered by urban areas, but both are equally hampered by reduced visibility. While the defender normally has the advantage, operations are slow and deliberate and small-unit operations predominate. The defender enjoys superior protection as well as concealment and covered routes of movement. The attacker can isolate and bypass certain areas; but he is forced to fight into other, well-defended areas.

8-56. FA units can use positions in villages and small towns to great advantage. Barns and other large buildings offer complete concealment of weapons and equipment. Normally, decentralization is required. Detailed orders and TSOPs are necessary due to decreased communication ranges and extended frontages for firing units. FA techniques of assault fire and direct fire may be required more often on urban terrain than elsewhere. FM 90-10, *Military Operations on Urbanized Terrain (MOUT) (How to Fight)*, and FM 6-20-40 contain additional information on MOUT.

DEPLOY/CONDUCT MANEUVER

- Ensure PAs are identified that will support emplacement since there is a predominance of concrete surfaces in urban areas.
- Anticipate the possibility that street rubble may hamper movement.
- Anticipate increased movements to overcome obstruction/dead space.
- Ensure howitzer positions allow for high-angle firing.
- Position FA on the edge of the urban area, if possible.
- Provide multiple routes of escape from the position.
- Select howitzer positions that allow direct fire capability.

DEVELOP INTELLIGENCE

- Closely coordinate targeting efforts to ensure all protected areas and FSCMs are identified and posted to automated and manual systems.
- Determine the status and disposition (friendly, enemy, neutral) of the indigenous population and whether or not the enemy is using the urban population for cover.

EMPLOY FIRES

Detect And Locate Targets

- Identify size and location of dead space (where indirect fires cannot reach). Dead space is generally five times the height of buildings for low-angle fire and one-half the height of buildings for high-angle fire.
- Plan radar coverage to take advantage of the increase in high-angle fires. Radars lose effectiveness if positioned too close behind buildings.

Deliver Fires

- Careful use of VT is required to avoid premature detonation.
- Use caution in the adjustment of fires. Rounds can be lost behind building or other structures.
- The battalion may support more small-scale battles than normal. This involves frequent shifting of fires from one mission to the next. The battalion may need to shift ongoing missions between firing units if battle movements or adjustments move the fires into the dead space of the initial firing unit.
- More frequently, FDCs must account for bursting radius, delivery errors, and standard deviations. Reference cards, TSOPs, and rehearsals are critical in ensuring that clearance of fires doesn't become a slow, cumbersome process.
- Commanders may require close control of WP since it may create unwanted fires and smoke.
- Use fuze delay to penetrate fortifications and buildings.
- Plan for increased use of high-angle fires (cannon units).
- Consider an increase in ammunition expenditure, especially if other FS assets are not available.
- To provide maximum flexibility in MOUT's diverse situations, the reinforcing FA unit may be a composite heavy/light/MLRS force.
- Use precision-guided munitions to minimize rubbling.
- Consider the limitations of laser designators in urban terrain, such as:
  - The difficulty in maintaining a continuous laser track on moving targets because of structure interference.
  - Obstructions may limit the battalion's ability to mass fires.
  - The presence of highly reflective surfaces, such as windows that may refract laser energy and/or pose a hazard to friendly troops.
  - Presence of highly absorptive surfaces such as open windows or tunnels, which may degrade designator effectiveness.

- It may be hard to position designators to ensure Angle T does not exceed 800 mils.
- The need to plan for an increase in hasty survey since conventional survey is hampered by decreased line of sight.
- Determining accurate locations by map spot can be difficult.
- The need for multiple SCPs. Anticipate survey difficulties due to obstructions, rubbling, and electro-magnetic interference (e.g., metal, powerlines, transformers)

EXERCISE C2

Communicate

- Anticipate reduction of radio ranges due to line of sight problems.
- Increase use of wire, messenger and visual signals.
- Route wire through sewers and buildings for protection.
- Plan to remote antennas to upper floors to increase their range. Do not position antennas on rooftops since they will be vulnerable to fires and possibly give away unit locations.
- Locate generators near existing walls outside occupied buildings.
- Use existing civilian telephone systems for unsecured communications, when possible.

Coordinate Fire Support

- Avoid collateral damage to civilian populations, if possible.
- Well-defined priorities of fire are extremely important in MOUT.
- Consider use of aerial observers.
- Consider placing observers on overlooking terrain outside the city and using external routes for observer movement.
- FSCOORDs and FSOs will encounter more detailed rules of engagement and lists of protected or restricted sites and areas during MOUT. FSCM usage may increase.
- Identify potentially hazardous industrial sites that may require restrictive FSCMs.
- Consider underground dangers, gas, water, and power lines. A natural gas explosion or electrical fire in the vicinity of a protected structure, civilians, or friendly troops can become an ROE violation.
- Coordinate FA fires carefully due to the close proximity of friendly and enemy units (e.g., use of a numbering system for each building may aid in coordinating fires within close proximity of friendly troops.

PERFORM LOGISTICS AND CSS

- Anticipate an increased use of certain munitions (delay and concrete piercing fuzes, HE, or smoke).
- Use several smaller resupply convoys if movement is restricted.
- Anticipate difficulty moving large CSS vehicles inside firing positions.
- Use locally available power sources and supplies, when available.

- Plan for increased time for resupply actions.
- Consider use of prestocked supplies.

PROTECT THE FORCE

- Use existing structures as hardened positions. Ensure stability of building structure prior to occupation. Shock waves may cause weak walls and ceilings to collapse.
- Plan to increase OPs and listening posts (LPs), as terrain allows threat forces to infiltrate and get closer to artillery positions.
- Plan foot traffic routes to minimize exposure from observation and sniper fires from tall buildings.
- Consider using supplemental positions for battery defense.
- Avoid obvious positions if possible (e.g., parks and schoolyards).
- Establish guidance/drills for key situations (e.g., snipers and minefields).
- Consider unseen dangers (e.g., underground gas, water, or electrical lines).

ENCIRCLED FORCES

8-57. FA battalions may support the breakout of encircled forces as part of the encircled force, or from outside the encirclement. When the FA battalion is part of the encircled force it should:

- Quickly identify all FA/FS/TA assets within the encirclement and direct or participate in the reorganization. Ensure centralized control where possible and establish a force FA HQ if necessary.
- Complete 6,400-mil coverage.
- Retain the capability to mass fires where practical.
- Plan for aerial resupply of ammunition and critical items.
- Identify FA outside the encirclement that can range the FA battalion's zone of fire and coordinate support if possible.
- Reorganize FS communications to minimize overloading of these nets.
- Stress survival techniques.
- Identify appropriate FSCMs, such as a RFA or a RFL.
- Use CZs for Firefinder radars in both the encircled force and the main force areas to prevent fratricide.

8-58. The FA should be neither the first nor the last unit out of the perimeter during a breakout of an encirclement. If more than one firing element is within the perimeter, withdrawal should be phased to maximize the time FA fires are available. Consider external FA support if available. Maintain unit integrity at platoon or battery level if at all possible. The FA commander must keep in contact with both the lead element commander and the forces remaining in the perimeter. Moving units must anticipate hip shoots.

8-59. During linkup, the FA commander should:

- Integrate fires with the battle plans and establish FSCMs.
- Position weapons to support the relieving force.

- Plan for subsequent actions to include new missions for the FA.
- Establish and exchange sensor zones for Firefinder radars.

PASSAGE OF LINES

Forward Passage

8-60. During an offensive passage of lines, responsibility for FA fires passes from the stationary force to the passing force at the same time control is passed to the maneuver units. The stationary FA force may be attached to the passing FA force or it may be ordered to reinforce the passing FA force from its present positions, until the passing force has moved out of range.

8-61. During a forward passage, the FA commander should:

- Establish liaison and communications with the stationary FA HQ.
- Obtain and review the passage plans of the supported force.
- Determine security requirements.
- Obtain available target lists and fire plans from the stationary force.
- Plan and review PAs and routes.
- Review possible enemy observation capabilities in the area.
- Review FSCMs in effect and needed.
- Consider resupply operations for the future.
- Coordinate elements that are needed forward.
- Exchange survey data with the stationary force FA SPCE.
- Exchange Firefinder zone data, particularly CFFZs and ATIZs.

Rearward Passage

8-62. Withdrawal actions in the defense often involve a rearward passage of lines. This often occurs when a covering force withdraws behind the FEBA. FA units with each force exchange liaison and critical information as early as possible. They coordinate fire plans to synchronize and maximize their combined firepower. This includes the transfer of FA support responsibilities within the maneuver unit's sector. This transfer usually coincides with the passing of maneuver control. The withdrawing FA commander should:

- Exchange FA fire plans.
- Establish communications requirements.
- Coordinate clearance of PAs and routes, if needed.
- Coordinate resupply, if appropriate.
- Exchange survey data in the area with the passing FA SPCE.
- Establish and exchange recognition signals with the stationary force.

RELIEF IN PLACE

8-63. During a relief in place, the FA commander should:

- Establish liaison and communications between FA units.
- Provide existing fire plans to the incoming FA unit. Exchange LNOs.
- Establish procedures for the relief.

- Establish the contribution of the outgoing FA.

8-64. Normally, the FA units will not be relieved at the same time as the maneuver forces. The change of FA responsibilities is as agreed upon by the two FA commanders unless otherwise directed.

8-65. The outgoing force passes fire plans to the incoming force so those plans can be continued. Both FA commanders should:

- Exchange SOI Information.
- Prepare and disseminate fire plans to support the incoming force.
- Disseminate specific TSOP items of the incoming force.
- Disseminate the current target list to the incoming force.
- Plan fires to support or emplace a barrier or obstacle, as necessary.
- Plan smoke to screen friendly movements.
- Support the deception plan.

RIVER CROSSING OPERATIONS

8-66. During an offensive river crossing, FA units should consider:

- Aerial observers can provide surveillance beyond the river depending on availability and visibility. Smoke may limit ground observation.
- Consider using CFZs, with well thought out cueing techniques, on the river-crossing site, associated assembly areas, and air defenses.
- Fire series and groups to neutralize the bridgehead area and then to isolate it. Deep fires can also prevent or delay reinforcements.
- Positioning should facilitate rapid crossing.
- Ammunition expenditures, especially smoke and illuminating projectiles, will be high during a deliberate crossing. Consider aerial resupply initially to the far bank to offset congested crossing sites.
- Maintaining communications is critical when units are split on the two banks of the river crossing.
- DS FA units should displace to far bank positions as soon as the maneuver unit seizes first-phase objectives on the far bank and secure FA positions are available. Other FA units must cross the river before their supported maneuver units move out of range. FA crossings require well-planned integration into the overall combined arms movement plan.
- Survey assets should cross as soon as possible. When a survey team equipped with PADS crosses by river barge or boat, ensure plans allocate time for it to do a 10-minute zero-velocity update just before crossing. If the crossing will take longer than 10 minutes (total of loading, transport, and unloading times), then a conventional team must put in a starting control point on the far shore.

8-67. During a rearward river crossing, under pressure, consider:

- Anticipate fires to the flanks on enemy crossing sites and infiltrating forces involved in enemy flanking efforts.
- Consider using CFZs, with well thought out cueing techniques, on the river-crossing site, associated assembly areas, and air defenses.

- Use CFFZs and templating to locate enemy FA that attempts to interdict friendly routes of withdrawal, reinforcement, and resupply.
- Plan for increased close fires (FPFs, smoke, and SCATMINE) and massed fire missions to assist disengagement and withdrawal of the last maneuver elements across the river.
- Cross FA as soon as possible, while maintaining mission capability, to avoid entrapment and/or congestion.
- If the maneuver force plans to establish defensive positions on the far side, and stabilize the FLOT, consider engineer support to harden FA and FO/COLT/Striker positions on the far side.
- DS FA units may be able to move into hardened positions vacated by R/GSR/GS units. However, consider the risks that the previous fires may have compromised the positions.

SECURITY OPERATIONS

8-68. Units conduct security operations to provide early warning of enemy operations, to provide the force being protected with time and space within which to react, and to develop the situation for the protected force. The four forms of security operations are cover, guard, screen, and area security, which respectively contain increasing levels of combat power and security.

COVERING FORCE OPERATIONS

8-69. A covering force operation is usually a division or higher-level operation involving cavalry regiments and other forces specifically intended for these types of operations. The covering force is a tactically self-contained security force operating a considerable distance to the front or rear of a moving or stationary force. Offensive covering force operations emphasize reconnaissance along the main body's axis of advance and attempt to destroy the enemy's reconnaissance and security forces, determine enemy force dispositions, identify gaps or weaknesses that the main body can exploit, and to defeat and destroy forces as directed. Defensive covering operations focus on counter reconnaissance. They attempt to prevent the main body from being surprised, to defeat the enemy's reconnaissance and advance elements, determine the size and direction of the enemy's main attack, and delay and disorganize enemy forces in order to allow the main body more time to prepare its defense. Covering force operations are frequently fast-paced operations involving extended forces operating over long distances.

8-70. A FA battalion may be part of a larger covering force operation where a FA brigade, DIVARTY, or Corps Arty functions as the force FA HQ. The battalion may be DS to one of the maneuver forces or may be in a R, GSR, or GS role. Or the battalion may be DS to, and serve as force FA HQ of the covering force. In either case, the FA battalion may have one or more howitzer batteries from a cavalry regiment attached under battalion control. FA units involved in covering force operations should consider the following:

- Locate the enemy and provide immediately responsive fires to leading elements/elements in contact.
- Use priority of fires and quickfire channels.
- Attack deep targets with massed fires to prevent enemy reinforcements.

- Plan for hasty attack contingencies.
- Anticipate frequent moves and hip shoots.
- Keep ammunition uploaded.
- Plan for employment of hasty smoke and/or illumination, and increased suppressive fires.
- Plan to use SCATMINE to delay enemy formations and employ Copperhead for HPTs.
- Prepare for the use of permissive, o/o FSCMs and for rapidly moving FLOTs requiring frequent position updates.
- Plan for a passage of lines. Review passage of lines procedures.
- Position supporting FA forward. Consider future missions in selecting FA positions when the covering force operation nears completion.

SCREEN

8-71. Screen describes a force whose primary task is to observe, identify, and report information. A screen force fights only in self-protection. The screening force maintains surveillance, provides early warning to the main body, destroys enemy reconnaissance elements within its capability, and impedes and harasses the enemy. Indirect fires are a significant means of impeding and harassing the enemy. FA planning and execution in support of a screen mission is similar to that for a defend in sector mission.

GUARD

8-72. Guard describes a force whose primary task is to protect the main force by fighting to gain time, while also observing and reporting information, and to prevent enemy ground observation of and direct fire against the main body by reconnoitering, attacking, defending, and delaying. A guard force normally operates within the range of the main body's indirect fire weapons. The FA battalion supporting this operation, plans, prepares, and executes this mission as it would for a movement to contact or other offensive operations.

AREA SECURITY

8-73. Units conduct area security operations to protect friendly forces, installations, and actions in a specific area. Area security preserves the force commander's freedom to move his reserves, position FS assets, conduct C2 operations, and provide for sustainment operations. Area security actions, which may be offensive or defensive in nature, could include area reconnaissance; rear operations; and security of designated personnel, equipment, facilities, and critical points. Applications of area security missions are convoy and route security. FS considerations, for area security, are similar to those identified to support rear area operations.

REAR AREA OPERATIONS

8-74. Rear operations (sustainment area operations) are those activities from a maneuver unit's rear boundary forward to the rear boundaries of subordinates forces, which are conducted to ensure the unit's freedom of maneuver and continuity of operations, including continuity of sustainment and C2. The unit must synchronize the rear operations functions of terrain

management, security, sustainment, and movement in consonance with the higher HQ commander's concept and intent.

8-75. A DS FA battalion must plan fires throughout the supported brigade's AO, to include defense for the BSA (e.g., base clusters). The S1, S4, or HHSB commander (or SB commander) will normally function as the FSO for the BSA. He is responsible for planning fires and forwarding them to the brigade FSE. As the rear area FSO, he should coordinate other FS assets through the brigade FSE as well. The battalion S3 should consider the following when developing plans to execute FA fires in support of a BSA: PA selection, nonstandard mission assignment, o/o mission of R FA.

8-76. While the division and corps rear FSEs are the primary planners and coordinators of division and corps rear area fires, R, GSR, and GS FA battalion may participate in the process. They may assist in coordinating fire plans with nearby CSS units or host nation military, paramilitary, or civil authorities. They may also provide call for fire training to key personnel, especially those responsible for base cluster defenses.

8-77. Three levels of response to rear area threats serve as guides for planning rear area operations. These levels focus on the nature of the friendly actions needed to defeat the threat.

- **Level I.** Smaller threats that the base or base cluster self-defense measures can defeat.
- **Level II.** Threats beyond the capability of the base or base cluster self-defenses but that relatively small response forces (e.g., MPs) can defeat.
- **Level III.** Threats that require commitment of a combined arms tactical combat force (TCF) to defeat them.

8-78. Commanders will generally reserve FA fires for Level III threats or in supporting a MP force engaging a Level II threat in an area where collateral damage is reduced. FA units should also consider the following factors.

DEPLOY/CONDUCT MOVEMENT

- Rear FSOs can assist FA battalions with terrain management issues.
- Level III threats may cause significant traffic as CSS units and civilians move away from the threat. FA battalions may need to request priority for movement and MP assistance (if available).

DEVELOP INTELLIGENCE

- The S2 should closely monitor developing situations in the rear to better anticipate potential battalion involvement and determine the nature and extent of enemy rear area threats.

EMPLOY FIRES

- Because FA units are not usually given rear area support as a primary mission, responding FA units must quickly review assigned EFATs and other tasks to determine the impact when given rear area missions. If backup plans are not adequate the unit should notify FSEs and force FA HQ so the EFATs can be reassigned or terminated.

- Ammunition restrictions on SCATMINE and dud producing munitions may limit FA to HE, except for major penetrations. Illumination may require high-angle fire to allow safe firing. Consider fire hazards.

EXERCISE C2

Communications

- Communication with the division or corps rear FSE may be difficult due to distances. A FA battalion may need to relay fire planning and/or fire coordination information through another FA battalion.
- Nonstandard communications arrangements may be necessary. CSS units may not have digital equipment that interfaces with FA systems. Host nation civil or paramilitary force may not have compatible radios.

Fire Support Coordination

- Commander's guidance, FSCMs, and ROE for FA fires in rear areas are generally restrictive in nature (RFAs, NFAs).
- Commanders may task FA battalion's in rear areas to provide FOs or FSOs to assist with rear area operations. Fire mission requests in rear areas may frequently involve untrained observers.
- A FA battalion may participate in development of a hasty fire plan with the FSO of a responding TCF, MPs, and other response forces. Consider using RFLs to control fires between converging friendly forces.

PROTECT THE FORCE

- FA units requiring force protection fires may request attack helicopters and slower fixed-wing CAS support when available.

LINKUP OPERATIONS

8-79. Linkup operations join two friendly forces. Both forces may be moving toward one another or one may be stationary. Often, a linkup operation requires a passage of lines. When the linkup is made, the linkup force may join the stationary force or it may pass through or around and continue the attack. The controlling HQ of both forces establishes the command relationship between the two forces and the responsibilities for each. It also establishes the control measures. FA considerations include:

- As the linkup nears completion, consider future operations in positioning of battalion elements.
- Plan for the increased use of o/o RFLs and CFLs.
- Place increased emphasis on maintaining updated position and FSCM locations in both automated and manual systems.
- Anticipate blocking fires to prevent trapped enemy forces from escaping the linking forces.
- Ensure clearance of fires procedures address all contingencies and FA forces. GS/GSR units may need to clear fires with both linking forces.
- Exchange targeting and communications information, triggers, quickfire channels, laser designation codes, and other essential items.

- Exchange recognition signals and disseminate to all personnel.
- FA units supporting linking forces should consider exchanging liaison. If the linkup involves a stationary and moving force, the moving force FA should provide liaison to the stationary force FA

BREACHING OPERATIONS

8-80. Breaching is a synchronized combined-arms operation under the control of a maneuver commander. Breaching operations begin when friendly forces employ suppressive fires and end when battle handover has occurred between a unit conducting the breaching operation and follow-on forces. FA considerations in supporting breaching operations include:

- Anticipate high volumes of suppressive (HE/VT, DPICM) and obscuration ammunitions. Develop CCLs to support breaching EFATs and schedule delivery to maximize ammunition resupply operations.
- Provide fires during all phases of the breaching – suppress, obscure, secure, reduce (SOSR). See FM 6-20-40 for more information on SOSR.
- Backup plans are especially critical to maintaining suppressive and obscuration fires while the breaching team is exposed.
- Unplanned breaching operations may require that the S3 quickly review ammunition status for impact on other EFATs.
- Position a FO or FIST member forward to coordinate fires for the breaching team. Plan for observers in depth.
- Primary and backup FA firing units must understand the primary and backup triggering plans to shift fires to the assault force .
- If Copperhead is used against armored vehicles protecting the obstacle site, it may be better executed early, as preparatory fires, to prevent interference to lasing from the obscuration fires.
- Anticipate SEAD fires if air assets participate in the operation.
- Consider using SCATMINE to prevent reinforcement or counterattack. Ensure it does not interfere with the breaching or the follow-on assault.

ARTILLERY RAID OPERATIONS

8-81. An artillery raid is a type of spoiling attack that uses FA as its primary attack mechanism. Raid missions support the higher HQ objectives by sending firing elements forward to engage enemy targets that are currently beyond the maximum range of available FA weapons. Raids may occur in conjunction with a large ground attack that seizes the terrain needed for the firing unit, with a small force that creates a relatively small moving pocket, or even without a significant ground force (if the threat is low). Light FA units may conduct airmobile FA raids. An artillery raid is frequently a platoon or battery size operation, but can involve an entire battalion.

PROCEDURES

Unit Selection

8-82. If higher HQ does not specify the firing element, the battalion S3 determines which unit/firing element will conduct the raid mission based on:

- Weapon system availability (desired effects on target).
- Ammunition availability (number and type of rounds).
- Location of firing element (proximity to firing points).
- Tactical situation.

Raid Briefing

8-83. For cross FLOT operations, the battalion HQ will conduct a raid briefing with the battery commander of the selected battery. If available, the commander of the maneuver security force should be present during the briefing in order to affect coordination. Due to time constraints or travel distance involved, a face-to-face meeting with the maneuver commander may not be feasible. For raids to be conducted behind the FLOT with minimal external assistance, raid missions may be passed via FM radio (voice or digital). At a minimum, the battalion commander or S3 will brief:

- **SITUATION.** Friendly, enemy, attachments, and detachments.
- **MISSION.** Who, what, when, where, and why to include the size of the element to conduct raid, method of control, and target/FP grids.
- **EXECUTION.**

  Behind the FLOT operation:
  - Route to operations area (OPAREA).
  - SP/CP/RP locations.
  - Firing point OPAREA.
  - Rally point after mission.
  - Target grids.
  - Firing window or TOT.
  - Number/Type rounds per target.
  - Number of howitzers/launchers authorized.
  - Call signs and frequencies.
  - FSCMs.
  - Abort authority and abort code word.
  - Emergency destruction (ED) criteria.
  - FS assets available.

  Cross FLOT operation. In addition to the elements involved in a behind the FLOT operation, the following must be considered:
  - Link up-point with maneuver element guides.
  - Force protection (ADA, EW, FS assets, escort).
  - Passage lane/passage point.
  - Procedures/Signals for passage of lines.
  - Maneuver call signs and frequencies.
  - Maneuver commander name and rank.
- **SERVICE SUPPORT.**
  - Maintenance support/contact team requirements.
  - Survey support available.
  - Reload requirements.

- Amount of ammunition to be brought forward.
- Refuel support.

- **COMMAND AND SIGNAL.**
  - Retrans location and frequency.
  - C2 (e.g., FDC vehicle, OE254).

Execution Of The Raid

8-84. The following procedures identify responsibilities and outline steps for the actual execution of the raid:

- Firing units will carry forward only the number of vehicles necessary to accomplish the mission as designated by battalion. (Depending on the importance of the target, one additional howitzer/launcher will be brought forward and laid on the target in case of technical/ mechanical difficulties). Weapons platforms with automated fire control systems will move forward with the mission in their system and a hardcopy of the mission in case manual fire mission processing is required.
- Firing unit(s) arrive at the link-up point.
- The OIC/NCOIC of the raid party will brief the maneuver unit commander or representative at link up point or via FM communications as directed.
- Once the brief is conducted, the leader of the raid unit or a maneuver escort will bring the firing elements to the link-up points.
- Security force will move forward and clear the route to the FP.
- If possible, report link-up, movement/checkpoints, and in position to BOC. If necessary, a vehicle will be brought forward with the raid element to act as a relay between the raid element and the controlling raid HQ if constant communications is required. If not, the communication will be maintained between the supported unit HQ, the battalion TOC, and the raid OIC. The raid OIC must be prepared to accept target updates prior to the designated time.
- Once the maneuver security force has cleared the route and OPAREA, the firing element will be called forward to the firing points.
- The mission(s) is (are) fired. Units will report shot on each target and rounds complete to the controlling HQ.
- Firing elements will then withdraw to a pre-designated rally point.
- If the firing unit was briefed that it was to perform a follow-on mission, the unit would proceed to the next location and fire the mission. MLRS launchers may need to reload between missions. Upon rounds complete, the firing element will withdraw to the rally point.
- Battalion will provide abort criteria.

CHECKLISTS

8-85. The use of checklists can assist raid planners. These can be developed as part of the unit TSOP or battle books. An example of a battalion level checklist for an artillery raid operation is provided in the following table.

Table 8-1. Artillery Raid Planning Checklist (Example)

ARTILLERY RAID PLANNING CHECKLIST (BATTALION)	
ITEM	**ACTIVITY**
1	Verify raid order contains all pertinent data.
2	If not specified by higher HQ, what size FA unit is necessary for successful mission?
3	Who is the raid force commander (maneuver? FA?).
4	What force protection will support the raid force?
	▪ Maneuver Force?
	▪ FS Plan?
	▪ Air Defense? (attack helicopter/CAS Spt)
	▪ Reconnaissance and Security?
	▪ Radar?
	▪ Observers?
5	What are the ABORT criteria?
6	What frequencies will be used to C2 the raid?
7	Any updates on enemy/friendly situation that impact on raid?
8	What is the route (does it require clearance by a maneuver commander)?
9	Passage of Lines.
	▪ Linkup Grid and Time?
	▪ Routes?
	▪ Maneuver Graphics?
	▪ Engineer Plan (mobility/countermobility)?
	▪ Air Defense Plan and Coverage?
	▪ FS and Observation Plan?
	▪ C2 (Raid Battle Handover Line)?
	▪ MEDEVAC Support?
	▪ Maintenance Support?
10	What survey support is optimal/adequate for raid force?
11	Is met available/valid?
12	Will ammunition need to be brought forward? How much?
13	What is the reload plan (approved location for reload operations)? Need to conduct reload to complete the mission?
14	Will the Firing Point require clearance by a maneuver force? Will this be in addition to the security force?
15	What is the link-up grid for coordinating with the raid force commander? When will link-up take place?
16	What is the name, frequency, and call sign of the raid force commander/security force?
17	Notify the raid BC of the raid mission and time/place of briefing.
18	Plot firing positions, passage lanes/points/ routes to OPAREA.
19	Determine/verify firing elements, # of howitzers/launchers and C2 structure.
20	Develop timetable (SP, TOT).
21	Brief the BC of the raid element battery.
22	Track planning and rehearsal schedule coordinated by battery.
23	Monitor & track progress of raid

SECTION V – FA SUPPORT OF STABILITY OPERATIONS AND SUPPORT OPERATIONS

8-86. The FA battalion may support a wide variety of stability operations and support operations that may or may not involve traditional combat. Because stability operations and support operations involve significant political considerations, and are often multinational, joint force operations, the FA battalion leadership should understand the nature of the joint, multinational, civil, and military relationships, and the cultures of our allies and the host nation. The FA battalion's success relies in large part on the legitimacy provided by international agreements, in the battalion's ability to abide by established agreements and ROE, and, often, in the unit's ability to remain neutral while executing assigned tasks.

8-87. Stability operations and support operations may encompass activities where FA organizations are employed in areas outside the US in support of operations in nontraditional, noncombatant roles without primary weapons. Disaster relief and humanitarian assistance and security are examples. The FA battalion's communications infrastructure, coordination skills, and inherent mobility can enhance and assist a command's overall coordination and liaison effort. Potential responsibilities include enhancing effective C2, convoy operations, local security operations, and liaison in support of civil-military affairs.

STABILITY OPERATIONS

8-88. Stability operations involve the application of military power to influence the political environment, facilitate diplomacy, and interrupt specified illegal activities. They include both developmental and coercive actions. Developmental actions enhance a government's willingness and ability to care for its people. Coercive actions apply carefully prescribed, limited force and the threat of force to achieve objectives. The types of stability operations that a FA battalion may participate in include, but are not limited to the following:

- Peace operations (peacekeeping, peace enforcement, peacemaking and peacebuilding).
- Foreign Internal Defense.
- Security assistance.
- Humanitarian and civil assistance.
- Support to insurgencies.
- Support to counterdrug operations.
- Combating terrorism (counterterrorism and antiterrorism).
- Noncombatant evacuation operations.
- Arms control.
- Show of force.

8-89. While each operation is unique, seven broad imperatives help forces develop concepts and schemes for executing stability operations:

- Stress force protection.

- Emphasize information operations.
- Maximize interagency, joint, and multinational cooperation.
- Apply force selectively and discriminately.
- Display the capability to apply force in a nonthreatening manner. Demonstrate strength without provoking a potential adversary to act.
- Understand the potential for disproportionate consequences of individual and small unit actions.
- Act decisively to prevent escalation.

FA SUPPORT OF STABILITY OPERATIONS

DEPLOY/CONDUCT MANEUVER

- Select hard surface roads whenever possible to minimize the risk of encountering mines and booby traps.
- Coordinate cleared and approved routes before departure.
- Maps may not be accurate. Aerial reconnaissance may facilitate movement planning.
- Helicopters can quickly emplace advance party teams.
- Closely monitor vehicle locations as they move throughout the AO. Ensure convoy leaders report departures, maintain communications during movements, and report arrival at the destinations.
- Keep vehicles on hard surfaced roads if stopped. Do not "herringbone" off the road unless a credible air or indirect fire threat exists.

DEVELOP INTELLIGENCE

- The S2 should obtain a clear understanding of the intelligence/TA assets available and the channels for requesting and reporting intelligence information.
- The S2 should receive a thorough intelligence briefing on the military, political, and social factors that may impact on the mission.
- Develop an intelligence collection plan that addresses both military and civilian elements.
- The S2/S3, in coordination with appropriate FSEs, should develop or obtain a list of protected/restricted areas that are or may be protected with FSCMs. This is necessary in targeting, and can identify potential “sanctuary” areas the enemy may try to exploit to his advantage.

EMPLOY FIRES

Detect And Locate Targets

- Integrate all information sources to identify potential targets.
- Coordinate TA assets to locate potential targets; potentially in a 6,400 mil capability.
- Develop an observation plan that includes priority intelligence requirements, addresses both military and civilian activity, is objective oriented, and focuses on monitoring critical areas.

- Ensure accurate target locations by using 1:25,000 or 1:12,500 scale maps for greater accuracy.

Deliver Fires

- Plan and execute fires within the confines of established ROE and commander's guidances. Plan to provide defensive fires to protect the force, and offensive fires as required by the nature of the operation.
- Plan to provide fires in a dispersed, non-linear environment, using battery or platoon size firebases.
- Plan to provide fires to support convoys as they move through the AO.
- Control the use of hasty survey techniques.
- When required, use precision munitions and centralized fire control procedures to minimize collateral damage.
- Plan and rehearse clearance of fire drills. Clearance of fires may include coordination with designated civilian agencies.
- Plan for 6,400-mil capability since a well-defined front line is unlikely.

PERFORM LOGISTICS AND CSS

- The S4 should identify all joint, multinational, and host nation sources of supply and any guidelines, especially to use of host nation resources.
- Plan for surge use of specific classes of CSS, increased consumption of Class I and VII, and increased use of Class IV barrier material.
- Ensure mine detectors are operational and soldiers trained in their use.
- Consider means for channeling refugees to collection points.

EXERCISE C2

Communicate

- The S6 should review anticipated tactical situations and EFATs for unique communication and automation requirements involving joint and multinational forces.
- The dispersed nature of the operations may necessitate additional retrans capability. Consider security for retrans teams.
- Plan to use unsecured communications with allied and NATO forces.
- Plan to use local telephone networks, if available.

Coordinate Fire Support

- Identify and develop/obtain a list of locations that have political, religious, or other significant considerations that must be accounted for during FS planning and development of commander's guidances.
- Identify ROE.
- Ensure targeting, clearance of fire procedures, and use of FSCMs minimize collateral damage and adhere to ROE.
- Identify unique liaison requirements with joint, multinational, and/or civilian agencies and units.

- Identify information operations requirements, assign tasks, and prepare plans as appropriate.
- Consider distribution of the FSP down to the lowest level possible – to include checkpoints, patrols, and logistics convoys.

PROTECT THE FORCE

- Position units to protect them from potential enemy indirect and direct harassing fires, and allow mutually supporting fires.
- Harden positions whenever possible.
- Consider using CFZs on key friendly forces to facilitate counterfire against attacking enemy indirect fire assets.
- Train all soldiers on booby trap and mine identification, likely locations, and marking procedures.
- Ensure an advanced party clears PAs of mines prior to the main body arriving. Initially clear lanes for critical vehicles to move into position (e.g., FDC, howitzers.). Clear noncritical areas as time permits.
- Use proper reporting procedures when mines are located. A good method is using the acronym HARMM:
  - **H**alt all movement.
  - **A**void disturbing the mine(s).
  - **R**eport the location of the mine(s).
  - **M**ark the location.
  - **M**ove out of the area.
- Develop and practice battle drills for responding to mounted and dismounted mine strikes.
- Establish a secure perimeter to guard against ground attacks, displaced civilians entering the perimeter, and thieves.
- Ensure vehicles never travel alone.

SUPPORT OPERATIONS

8-90. Support operations provide essential supplies and services to assist designated groups. They are conducted to help foreign and civil authorities respond to crises and include action to save or protect lives, reduce suffering, recover essential infrastructure, and improve quality of life. The types of support operations that a FA battalion may participate in include, but are not limited to the following:

- Humanitarian assistance in dealing with starvation, epidemics, and similar emergencies.
- Environmental assistance in responding to floods, earthquakes, and other natural or manmade disasters.

8-91. Although each support operation is unique, seven broad imperatives generally guide involvement:

- Secure the force, equipment, and supplies.
- Provide essential support to the largest number of people.
- Hand over assistance operations to civilian agencies as soon as feasible.
- Establish measures of success.

- Conduct robust information operations.
- Ensure operations conform to legal requirements.

FA SUPPORT OF SUPPORT OPERATIONS

8-92. If support operations involve the potential use of force or traditional combat, many or all of the considerations applicable to stability operations will also be appropriate to support operations. However, support operations usually involve reduced potential for use of significant force.

DEPLOY/CONDUCT MANEUVER

- Anticipate dispersed operations and small unit positions. Terrain management may involve both military and civilian agencies.
- Road conditions may be poor, especially on frequently used routes. Develop a prioritized list of engineer support requirements.
- Consider refugee and military/civilian emergency vehicle traffic .

DEVELOP INTELLIGENCE

- The FA battalion TOC can assist civil authorities with collection and dissemination of vital information, requirements, and status reports.
- Ensure the lack of a threat does not make unit soldiers complacent to OPSEC procedures. Adversarial intelligence collection activities may occur. Conduct a thorough OPSEC review to identify issues. Brief all soldiers on OPSEC precautions and reporting procedures.
- Establish close coordination with MPs, the Criminal Investigation Division, and other military and civil authorities to monitor threat levels and criminal activities that may impact battalion operations. These include theft of military supplies and equipment, black-market activities, racial/sexual/ethnic assaults, and similar issues.

PERFORM LOGISTICS AND CSS

- The battalion must plan, coordinate, and provide CSS on a dual support basis – direct mission-related CSS, and normal battalion-oriented CSS.
- Plan for dispersed maintenance and recovery operations.
- Identify available host nation and multinational support.
- Some relief convoy operations may involve both military and civilian agencies and vehicles. This requires careful coordination and security.

EXERCISE C2

- Unit communications equipment may be multi-tasked, assisting with support operations as well as in coordinating the battalion's operations.

PROTECT THE FORCE

- Conduct detailed, comprehensive risk analysis to identify all potential hazards and unique situations encountered in support operations.

- Disease and sanitary precautions may be higher force protection priorities than normal. Pre-deployment medical reviews should ensure all soldiers are inoculated and free of major health problems. In country, preventative measures include proper positioning of forces, good sanitary practices, and guidelines on interaction with the host nation populace and multinational force personnel.

SECTION VI – CLIMATE AND TERRAIN CONSIDERATIONS

8-93. Both climate and terrain can vary widely between different operational areas, and even within the same operational area. FA battalions frequently adjust their TTP to account for these differences. Some of the climate and terrain factors that FA battalions should consider are discussed in the following paragraphs.

NIGHT OPERATIONS

8-94. Effective operations during hours of darkness are essential in combat. The basic ingredient of successful offensive or defensive night operations is the confidence of the individual soldier in his ability and equipment in the night environment. This confidence stems from detailed planning and effective training. The adverse effects of darkness require a change in techniques and procedures. However, it is important to note that darkness imposes limitations equally on enemy forces.

8-95. The objectives of night operations are to:

- Achieve surprise and avoid losses that might be incurred in daylight over the same terrain.
- Compensate for advantages held by a numerically superior enemy who has air superiority.
- Retain the initiative by defeating enemy night operations.
- Exploit our technological advantage at night over a less sophisticated enemy.

8-96. Planning considerations for the basic FA tasks in support of night operations are discussed in the following paragraphs.

DEPLOY/CONDUCT MANEUVER

- Plan and rehearse RSOP procedures for night occupation.
- Plan for increased movement times at night.
- Plan for the increased use of traffic control points to ensure the correct direction of travel is maintained during movement.
- Guide every vehicle into position according to the track plan.
- Erect tentage before darkness and check for light leaks.
- Install generators and light sets before darkness.

DEVELOP INTELLIGENCE

- Scout high traffic routes during daytime to identify potential ambush sites and intersections or turns where vehicles and convoys may become misdirected or where large vehicles may have difficulty traversing.
- Identify locations of MP, maneuver, and other friendly force checkpoints and patrols. Also identify host nation checkpoints. Verify clearance procedures in place to ensure there are no misunderstandings in the dark.

EMPLOY FIRES

Detect And Locate Targets

- Limited sound flash observations by FOs, COLTs, and Strikers may be possible to supplement radar.
- Provide OPs with night vision devices.

Deliver Fires

- Adjust FPFs and danger close targets during daylight, if possible.
- Establish procedures for marking the end of the orienting line (EOL) and the orienting station (OS).
- During periods of relatively low activity and stable fronts consider firing from supplementary positions at night to reduce night survival moves of the entire battery.
- Review commander's guidances on use of illumination and smoke.
- Anticipate requests for illumination in the rear when enemy infiltration risk is moderate to high. Coordinate FSCMs and clearance of fire procedures. Obtain current friendly force locations.
- Plan for the increased time to perform hasty survey techniques.

PERFORM LOGISTICS AND CSS

- Plan resupply operations at night to decrease vulnerability.
- Ensure adequate amounts of illuminating and smoke projectiles are on hand and in the proper locations.
- Perform noisy operations while the unit is firing. Firing will mask the noise of heavy vehicular traffic and material handling equipment.

EXERCISE C2

Communicate

- Install and check communications equipment prior to darkness.
- Inspect operation of wire/LAN systems prior to darkness.

Coordinate Fire Support

- Determine the specific area in which the commander desires to use smoke to degrade enemy night vision capabilities. Ensure it does not degrade friendly night vision capabilities.
- Develop and distribute illumination and smoke plans early enough that the cannon units can deliver and prepare as much of the ammunition as possible during daylight hours.

PROTECT THE FORCE

- Plan and adjust on-call FPFs around unit positions prior to darkness.
- Establish direct fire sectors prior to darkness.
- Stress light and noise discipline.
- Include self-illumination in the unit defense plan.

COLD WEATHER OPERATIONS

8-97. Cold weather operations involve unique weather and climate considerations. Summer has long periods of daylight; while winter has long nights, deep snow, and extreme cold. Spring thaws turn low-lying areas into a morass of mud, which severely degrades surface mobility. Weather phenomena such as whiteouts and greyouts cause loss of depth perception, which increases the hazards of driving. Ice fogs often form over troop concentrations and disclose their location. In extreme cold, metal becomes brittle, hydraulic oil thickens and parts breakage rates increase. Rates of fire for indirect fire weapons decrease as a result of heavily clothed gun crews, cold weapons, and fogged lenses on fire control devices. The enemy force is equally affected by these extreme conditions of subzero weather and snow.

8-98. Winterization of equipment is critical for sustaining combat effectiveness. Indoctrination, training, and acclimatization of individual soldiers in northern region environments are essential first steps to overcoming these adversities. Thorough planning and preparation will help a FA unit fulfill its mission while facing the extremes of this environment. In winter, when daylight is shorter, maximize its availability for preparations, reconnaissance, rehearsals, and other key activities. Refer to FM 31-70, *Basic Cold Weather Manual*, and FM 31-71, *Northern Operations*, for more information on cold weather operations.

DEPLOY/CONDUCT MANEUVER

- Consider route reconnaissance by both ground and air.
- Determine ice thickness and load-bearing before crossing frozen lakes and rivers.
- Determine PAs prior to movement since frozen, snow-covered terrain may limit the number of available positions.
- Anticipate icy road conditions and blocked routes in mountain passes during cold weather. Conduct prior reconnaissance.
- Hot springs exist in some cold weather locations. They may freeze during extreme cold, but will weaken and thaw before other areas,.
- Plan for increased movement times due to local conditions.
- Use air assets to position artillery weapons, if available.
- Train soldiers to operate equipment on ice and snow.
- Enforce track plans in the PA.

DEVELOP INTELLIGENCE

- Increase air reconnaissance, especially when adverse road conditions.
- Photographic reconnaissance may provide valuable information on possible enemy FA locations, especially after fresh snow.

EMPLOY FIRES

Detect And Locate Targets

- Provide amber filters for binoculars and observation devices to help reduce the incidence of snow blindness.

- Anticipate degradation of radar operations due to extreme cold weather
- Update meteorology data when abrupt temperature changes occur.

Deliver Fires

- Plan for increased use of airburst munitions. HE-PD, HE-delay, ICM, and SCATMINE are ineffective in deep snow and frozen ground. Snow smothers at least 40 percent of the blast from these munitions.
- Use WP as marking rounds; however, phosphorus may burn undetected in the snow for extended periods and create a hazard to friendly troops.
- Plan to use VT fuzes for cold weather operations. However, snow and ice may cause premature detonation. Also, extreme cold causes an increase in the dud rate among VT fuzes. Use the new improved VT fuze (M732) to reduce this problem.
- Plan for decreased rates of fire as a result of heavily clothed gun crews, cold weapons and fogged lenses on fire control devices.
- Place additional emphasis on monitoring propellant temperatures.
- Plan on an increase in the use of high-burst or radar registrations and met plus velocity error (VE).

PERFORM LOGISTICS AND CSS

- Plan for decreased logistical resupply due to reduced mobility and difficulty in determining grid locations.
- Ensure supply convoys travel in close columns during whiteout conditions and prolonged darkness.
- Plan for an increase in parts breakage as metal becomes brittle in extremely cold temperatures.
- Plan maximum use of aerial resupply.
- Order larger quantities of POL due to an increased use of personnel heaters and vehicle warm-up operations.
- Check vehicle winterization often to ensure continued protection.
- Exercise weapon recoil systems often between fire missions.
- Adhere to preventive maintenance checks and services (PMCS) as prescribed for cold weather operations.

EXERCISE C2

Communicate

- Plan for decreased communications effectiveness.
- Replace batteries, both dry-cell and nickel-cadmium, more frequently since they become less effective with the decrease in temperature.
- Cover the mouthpieces of microphones to prevent frost from forming.
- Plan for difficulty in establishing a good electrical ground in permafrost and deep snow.
- Keep antennas free of snow and ice.
- Check TMs for radios and power sources for special precautions during operation in extremely cold climates.

- Ensure retrans teams are well supplied to endure longer periods without resupply during inclement weather. Monitor storms that could cause them to become snowed-in in high altitude or mountainous cold weather regions.

Coordinate Fire Support

- Plan for limited ground mobility of artillery weapons and ammunition supply vehicles and increased time preparing for operation.
- Frequently relieve observers in exposed, extremely cold static positions.
- Establish a marking system for friendly locations.

PROTECT THE FORCE

- Provide firing areas with firing platform stability.
- Avoid emplacement in avalanche-prone areas. The sound produced by firing can cause an avalanche.
- Maintain seasonal camouflage for use by units.
- Train soldiers on the prevention of cold weather injuries.
- Provide warming areas for soldier use.

DESERT OPERATIONS

8-99. Military operations in desert regions are characterized by rapid, highly mobile warfare conducted over great distances. These fast-moving battles, with long-range visibility, are more suited to mechanized rather than light forces. Deserts offer little life support. Extreme weather conditions in the desert make combat operations demanding on both equipment and personnel.

8-100. Active deception techniques play key roles in the concentration and dispersal of FA units and security takes on added importance. Long-range engagements are common due to terrain, weather, and fields of fire. However, heat waves, mirages, and sandstorms can hamper ground observation. Air observation is highly effective in this environment; however, the absence of prominent landmarks in some areas degrades this capability. Also the lack of trees and hills makes aircraft more vulnerable to enemy air defenses. FM 90-3, *Desert Operations*, provides more information on desert operations.

DEPLOY/CONDUCT MANEUVER

- Position radars to provide the maximum screening crest.
- Consider the effect of sand and dust on visibility and convoy speeds.
- Position howitzers in defilade.
- Avoid predictable FA positions.

DEVELOP INTELLIGENCE

- Friendly ground observation is enhanced but additional early warning is required due to rapid movement rates. Quickly disseminate notifications of enemy penetrations or infiltrations to affected FA units.

EMPLOY FIRES

Detect And Locate Targets

- Anticipate terrain association and navigation errors that increase target location errors.
- Use G/VLLDs to perform target area survey.
- Emplace and camouflage radars and equipment at night, if possible.
- Exploit situational cueing.
- Anticipate increased survivability moves.
- Use PADS to establish OP location and directional reference.

Deliver Fires

- Request met support for transitional periods because of abrupt weather changes (especially temperature) in the morning and evening.
- Consider range requirements for meteorology support.
- Plan to provide survey control over extended distances.
- Plan for increase in hasty survey. Consideration should include:
  - Graphic resection if maps are available and accurate.
  - Simultaneous observation.
  - P-2 reticle and Polaris-Kochab use.
  - Use of PADS to determine direction and GPS for location in establishing SCPs.
- Consider the location of SCPs and their affect on providing control.
- Stress uniform storage and frequent measuring of propellant temperature due to high surface temperature effect on propellants.

PERFORM LOGISTICS AND CSS

- Plan for extended supply lines.
- Plan for increased water consumption.
- Plan for increased vehicle overheating, electrical component breakdown, and faster tire wear-out.
- Stockpile filters, coolants, lubricants, cleaning materials, and tires.
- Train soldiers in the prevention of heat and cold weather injuries.
- Plan for night and/or aerial resupply. However, dust clouds from helicopters must not give away PAs.
- Check vehicles batteries often and maintain adequate supplies of distilled water. Electrolyte in wet-cell batteries evaporates quickly.
- Perform frequent PMCS on vehicles, equipment, and weapons.

EXERCISE C2

Communicate

- Consider increased ranges for radio communications.
- Plan for early emplacement of retrans assets.

- Protect radio equipment. Failure rates increase due to blowing sand and large temperature variances.

Coordinate Fire Support

- Anticipate rapid enemy movement.
- Provide SEAD fires in support of CAS and attack helicopters.
- Prepare to support forces dispersed over wide expanses of terrain.

PROTECT THE FORCE

- Anticipate more heat and burn cases and snake and insect bite victims.
- Use the terrain to provide depth and dispersion.
- Use wadis for concealment.
- Use desert camouflage nets.
- Request attachment of anti-tank teams if contact with enemy armor or mechanized forces is anticipated.
- Employ crew-served weapons to maximize effective ranges.

JUNGLE OPERATIONS

8-101. Jungle operations involve a greater, but not exclusive, reliance on air assets for mobility, observation, and resupply of engaged forces. Surface mobility (wheeled and tracked) is limited. Light forces are best suited for jungle operations. They can be inserted and extracted by helicopter. High temperatures and humidity take their toll on equipment and soldiers. Frequent jungle operations include ambushes, raids, and small unit patrols. They seek to attack and destroy enemy forces, their bases, and their supplies.

8-102. Close in fighting is common in jungle terrain. FS may be limited to high-angle indirect fires and CAS. If the friendly force has a substantial advantage in FS, the enemy will most likely try to establish and maintain extremely close contact. This limits the effectiveness of FA because of the fratricide danger. For the FA battalion commander, the challenges are varied and many. His greatest frustration may be in trying to mass the weapons of the battalion because frequently firing units are dispersed over large areas in order to support small-unit operations. FA considerations for operations in jungle environments are discussed in the following paragraphs. FM 90-5, *Jungle Operations*, provides more information on jungle operations

DEPLOY/CONDUCT MANEUVER

- Select positions accessible by roads, when available.
- Plan to reposition using air assets.
- Anticipate difficulty in mobility for wheeled and tracked vehicles.
- Anticipate weather conditions and its effects on mobility.
- Plan equipment loads to maximize available air assets.

DEVELOP INTELLIGENCE

- Consider increased ground reconnaissance in and around FA PAs and routes and security assistance from MP and maneuver units.

- The S2 should look for signs that the enemy is using cleared locations as firing areas while using nearby cover for hide areas.

EMPLOY FIRES

Detect And Locate Targets

- Ensure safety considerations are stressed since map reading (self-location, target location and friendly unit location) is difficult.
- Plan for increase use of Firefinder radar for counterfire missions.
- Use ground surveillance radars and remote sensors, if available.

Deliver Fires

- Understand the following ammunition considerations:
  - HE-delay penetrates the treetops and splinters the trees, creating additional fragmentation.
  - Smoke has limited effectiveness in dense vegetation.
  - WP is effective as a marking round. Consider using an airburst WP round as the initial round in adjustment.
- Plan for a reduction in illumination effects because of vegetation.
- Anticipate increased hasty survey techniques as SCPs may be scarce and difficult to establish.
- Use creeping fires in heavy vegetation.

PERFORM LOGISTICS AND CSS

- Anticipate increased maintenance problems due to moisture and rust.
- Expect ammunition expenditure to be high and plan accordingly.
- Use air as the primary means of resupply, when possible.

EXERCISE C2

Communicate

- Plan for communication degradation in a triple-canopy jungle.
- Ensure antenna cables and connectors, as well as power and telephone cables, are off the ground. This minimizes the effects of moisture, fungus and insects.
- Elevate antennas above the jungle canopy when possible.
- Coordinate for aerial observers or airborne C2 platforms to act as relay stations, when possible.
- Use directional antennas to increase the range of FM communications.
- Plan the use of retrans assets.

Coordinate Fire Support

- Plan to fire high-angle missions.
- Plan for an increase in requests for SEAD.

PROTECT THE FORCE

- Position units for mutual defense, especially when thick vegetation increases vulnerability to ground attack.
- Plan and adjust for mutual support.
- Prepare to use anti-personnel mines (Claymores) and direct fire cannon munitions (105mm, Beehive) for immediate use while in position.
- Establish local all-around security.
- Select alternate and supplemental positions.
- Plan for increased health hazards, disease, and snake and insect bites.

MOUNTAIN OPERATIONS

8-103. Mountain operations include many of the same problems found in cold weather regions. Mountainous areas typically have rugged, compartmented terrain with steep slopes and treacherous mobility. Weather may span the entire spectrum from extreme cold with ice and snow in winter to extreme heat during the summer. In mountain operations, the advantages favor the defender, and the focal point is the battle to control the high ground. Infantry units are the most suitable force for this type of combat, particularly when properly supported. Also, the terrain promotes isolated battles that make C2 difficult. Small-unit commanders often operate semi-independently

DEPLOY/CONDUCT MANEUVER

- Position FA in defilade to increase their survivability. But beware of snow and rock slides in these positions.
- Give SP units priority in PA selection due to terrain limitations.
- Maximize helicopter airlift for movement, especially for elements such as retrans sites, observers, and PADs.
- Plan for air reconnaissance of routes and positions, when possible.
- On narrow mountain roads, turnaround locations for large vehicles and those pulling trailers may be scarce. Locate potential turnaround points during route reconnaissance.
- Plan for increased hasty survey. Place special emphasis on accurate altitude.

DEVELOP INTELLIGENCE

- Increase use of aerial reconnaissance and intelligence platforms and internal and external intelligence reports to compensate for reduced visibility and ground reconnaissance.
- Placed increased emphasis on terrain considerations (such as use of defilade) in templating enemy FA.
- Don't underestimate the enemy's ability to position mortars in difficult terrain. Range capabilities are more useful in templating.

EMPLOY FIRES

Detect And Locate Targets

- Place FOs on high ground to maximize visibility; however they may need to be staggered at different levels if low-level clouds are possible.
- Anticipate poor visibility due to clouds, fog, or snow blindness.
- Employ Firefinder radar to detect high-angle fires.
- Position Firefinder radar to maximize terrain masking.
- Plan for ground surveillance radars and remote sensors, if available.

Deliver Fires

- Choose shell/fuze combinations based on terrain, e.g., HE-PD, HE-delay and ICM are ineffective in snow; but are highly effective in rocky terrain. Also, consider slope or unevenness of the terrain and the adverse impact on both SCATMINE and ICM effectiveness:
  - RAAMS and ADAM must stabilize within 30 seconds of impact for the submunitions to arm.
  - Uneven terrain (plowed ground, jumbled rocks and so forth) may keep ADAM trip wires from deploying properly.
  - DPICM does not function if the angle of impact is greater than 60°.
- Anticipate difficulty in adjusting fires due to the mountainous terrain.
- Anticipate increased fire high-angle fires, and high-angle registration.
- Plan high-angle fires with airburst munitions on reverse slopes of hills and mountains.
- Use SCATMINE to restrict routes, especially at chokepoints.
- Anticipate difficulty in transfer of firing data due to the wide variance in altitude of firing units.
- Plan frequent met updates due to rapidly changing weather conditions.

EXERCISE C2

Communicate

- Consider the masking effects of mountains or hills on communications.
- Use directional antennas to increase range.
- Maximize line-of-sight radio communications.
- Plan retrans capabilities, to include helicopter radio relay. Airlift retrans units onto hilltops, when possible.

PERFORM LOGISTICS AND CSS

- Use helicopter and airdrop resupply when appropriate.
- Plan for increased maintenance on vehicles and equipment due to the increased strain caused by terrain and weather.
- Plan for additional cold weather contingency items required for sustained unit operations in mountainous terrain.

PROTECT THE FORCE

- Coordinate attack helicopter or air force support for the FA battalion as the mountains may reduce the use of mutually supporting fires.
- Request MP ground reconnaissance of routes, especially at chokepoints.
- Consider the danger of flash flooding in dry river beds or flood plains.
- Consider using open column convoy techniques through mountain passes and other restrictive terrain.
- Maximize use of terrain for cover and concealment to compensate for limited hardening potential. Position units in defilade.
- Position OPs, LPs, and crew-served weapons to enhance survivability by providing early warning and defensive fires.